

The Mining Journal

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Railway & Commercial Gazette

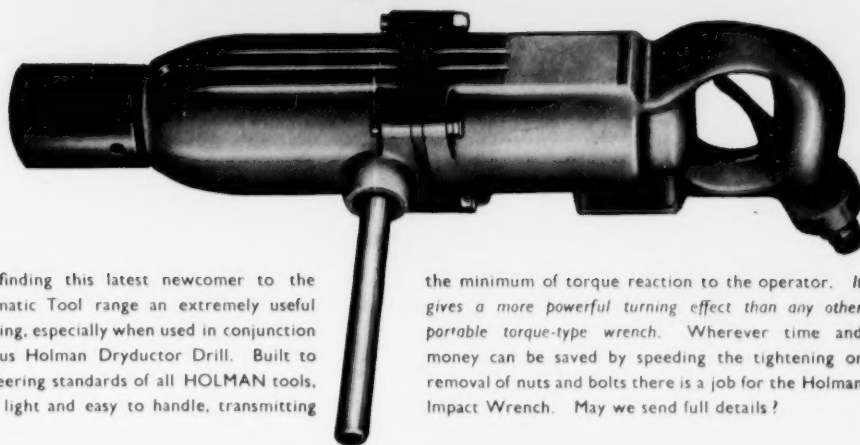
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LONDON, APRIL 8, 1955

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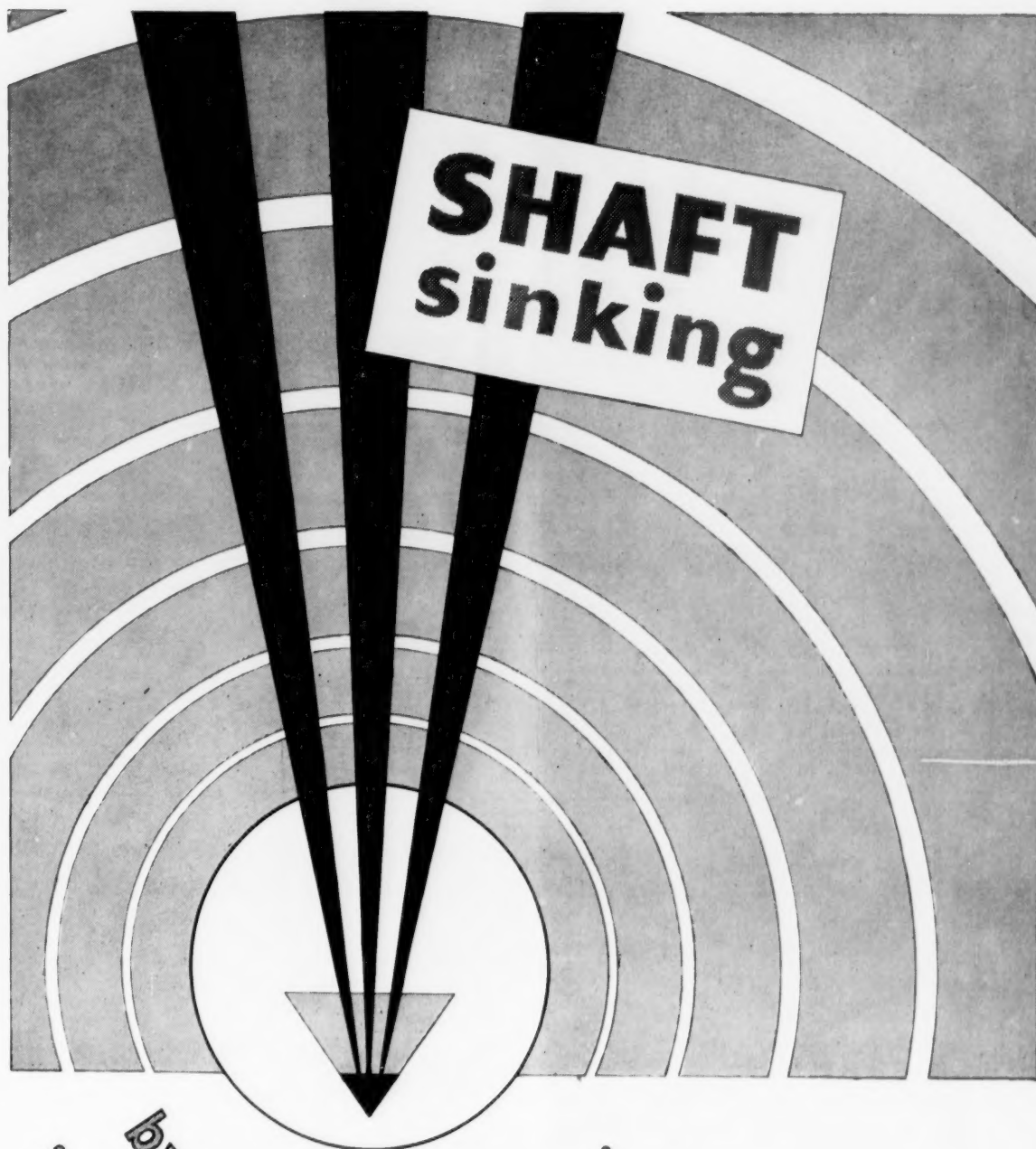
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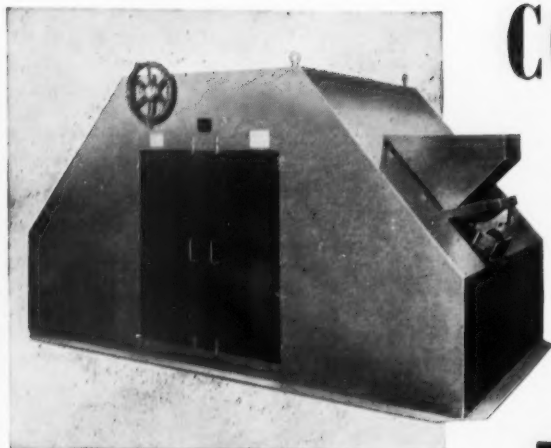




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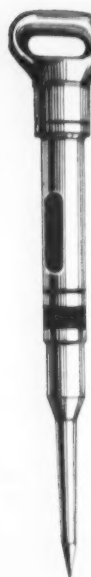
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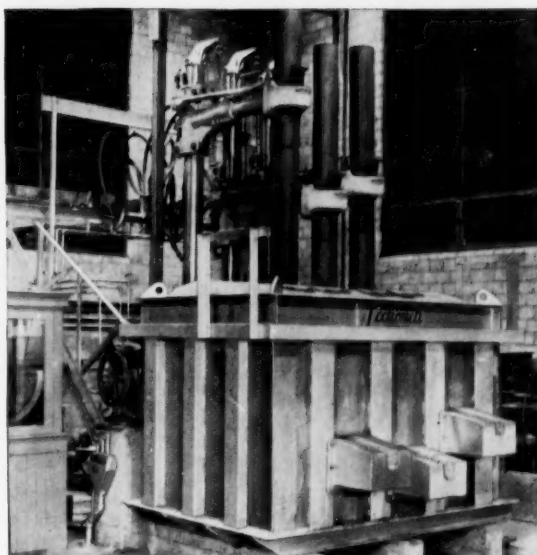
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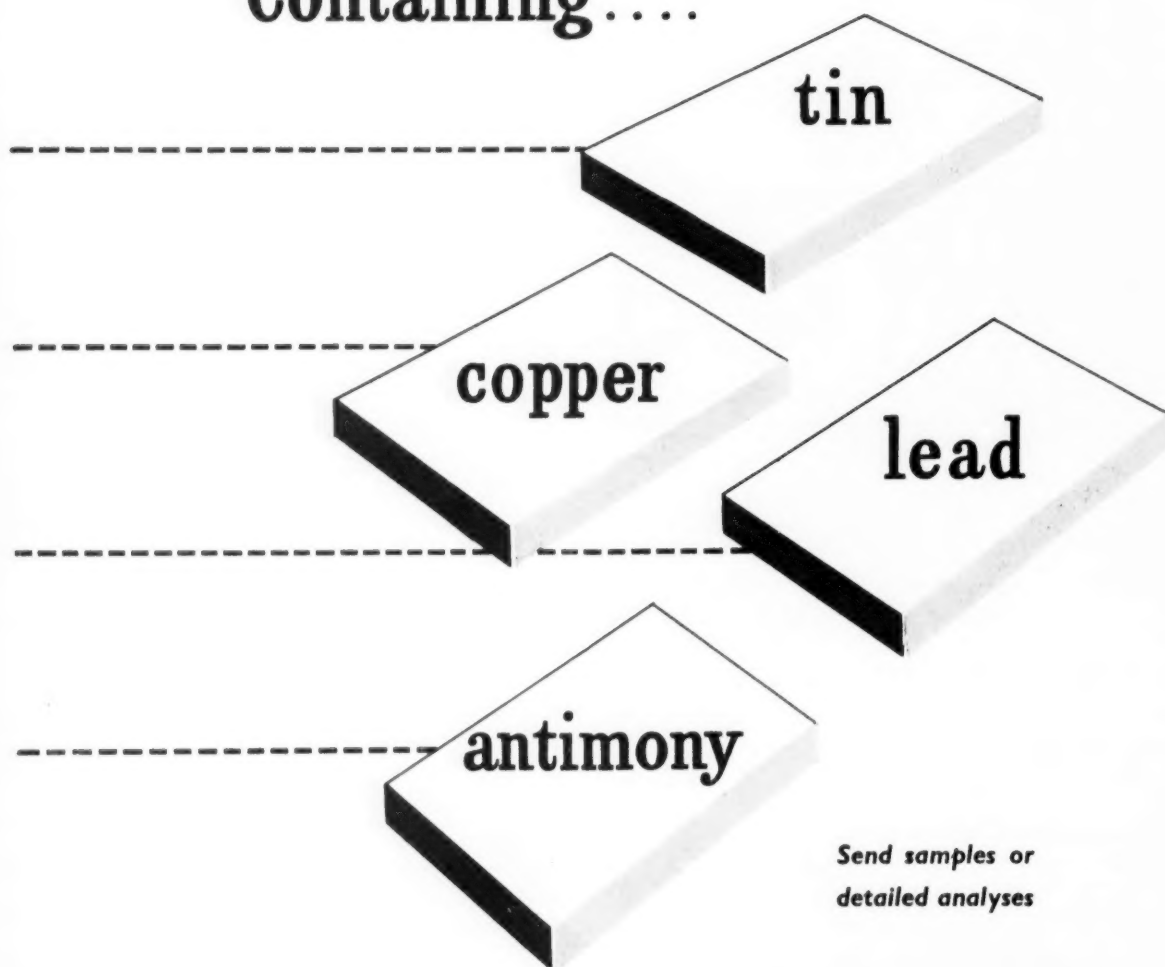
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The Mining Journal

Established 1835

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NOTES AND COMMENTS

Sir Winston Churchill Resigns

Sir Winston Churchill resigned the office of Prime Minister on Tuesday of this week. Although he was in control of the nation's affairs in all for less than nine years, this period included the crucial span of the Second World War in which providentially he was called upon to lead the nation. Some future historian may well see in all his previous career a sense of dedication without which this *tour de force* might never have been witnessed.

It would be an impossible task in the space at our disposal to even begin to describe the many sided interests of Sir Winston, whom few in the world to-day would not claim as the greatest man of our times. Yet the tribute paid him by the New Zealand Prime Minister, Mr. Holland, succinctly sums up the respect the whole world must in some degree feel for this great Englishman: "Seldom in the field of human endeavour has one man meant so much to so many."

As we expected Sir Anthony Eden has been called upon by the Queen to succeed him in office. No doubt one of the first decisions he will have to take will concern the date of the General Election. In view of the results of the Municipal Elections this may prove to be sooner rather than later.

As regards Sir Winston Churchill's future, he has elected to continue serving the nation in what will, in fact, become the role of an elder statesman.

Who Shall Control U.S. Tariff Policy?

The forecast by Mr. Felix Wormser, Assistant Secretary of the Interior, that a new American domestic lead-zinc programme will be officially announced soon may not sound particularly important; after all, the present lead-zinc stockpiling authorization runs out in midsummer. But the forecast takes on quite a different significance when it is viewed against the background of the tussle in the Senate on the President's foreign trade programme.

The Senate is now working behind closed doors (at least till the middle of April and possibly well past that time) to settle what now appears to be the great point of

issue—whether the executive or the legislature shall control tariff policy.

The Republican protectionists, at first alarmed at the free trade programme (the bill before the Senate, which would permit the President to negotiate lower tariffs; the current tariff negotiations with Japan under G.A.T.T.; and the new O.T.C. which is to be approved—as the old G.A.T.T. was not—by Congress) now see that by dint of its very size it has become an unexpected ally. Furthermore, the Republican protectionists are finding support among the Democrats.

The Southern Democrats' traditional attachment to free trade sprang from their connexions with the raw cotton exporters. But these cotton exporters are themselves now looking for an export subsidy and have little love for the pure milk of free trade. And the South itself has now a large manufacturing interest—a textile manufacturing interest to boot—which is not anxious to see tariffs further reduced and is apprehensive about the negotiations with Japan.

In other words, the forecast that a Democratic Congress would push through the President's liberalization programme in the teeth of Republican opposition is being falsified. If the Protectionists have their way and Congress resumes control of tariff policy the President will have suffered an overwhelming defeat. It is going to take all his personal prestige to fight off that defeat; and Mr. Eisenhower may well have been advised to throw some sop to the Protectionists—as, for instance, a new lead-zinc assistance programme possibly involving direct subsidies to weaker producers—so as to maintain the principle of executive control of tariffs.

Gold and Dollar Reserves

It is permissible—if perhaps still a little risky—to regard the statement of gold and dollar reserves at the end of March as the first harbinger of better times.

At \$2,667,000,000, reserves were only \$14,000,000 lower than at the beginning of the month compared with a net fall of \$82,000,000 in February. American defence aid was slightly higher than in past months but on the other hand

there were capital movements on both sides. Thus the real balance of the sterling area as a whole with the rest of the world was a deficit of \$28,000,000 against \$101,000,000 in February. These are extremely satisfactory figures by any reckoning and, in the time, no quicker recovery could have been expected.

But that does not mean it is safe to presume that the gain is solid. There must have been a substantial inflow of short-term capital in search of higher interest rates and these funds will have been covered forward by sterling selling, a fact that the reserves will have to reckon with in the summer. Further, the reserves themselves offer no conclusive proof that the sterling area's trading position has improved or even that the deterioration has been halted—although the latest E.P.U. figures are heartening. It will be midsummer before the balance of payments figures can be expected to show much benefit from the Chancellor's programme, while Australia's contribution to the fight for sterling will not be felt till late summer. On the strength of the reserve figures spot sterling moved in New York to \$2.79½, which was not only a sign of confidence in sterling but a sign that the Exchange Equalization Fund is not, at the moment anyway, having to support the rate which is the highest for many months.

Perhaps it was the knowledge that the reserves would be making a better showing that was responsible for the Economic Survey's optimistic view; and it is already being said that the Budget may have something to give away after all. The reserve figures are the swallow that doesn't alone make a summer, but with a budget and a general election in the offing it is the sort of error of recognition that is easily made.

Official News About Bethal

Mining operations are expected to begin soon in a "limited area" in the Bethal District, some 50 miles east of Johannesburg and well beyond the mines now operating in the East Rand.

In making this official disclosure Dr. Van Rhijn, the South African Minister of Economic Affairs and Mines, added that certain towns in the area were to be declared "controlled areas" in terms of the Natural Resources Development Act, with effect from April 1 in order to co-ordinate and speed-up the planning of the area.

Although the extent of the new area was not nearly as large as that of the Orange Free State goldfield, the Minister said that it could be expected that one or more mines would come into being which, in turn "would have a series of other developments."

Notwithstanding the difficulty of understanding what the Minister meant by this last statement, the mining world will feel that this first official announcement has been long overdue. Marketwise the long silence placed an awkward burden on the shoulders of Union Corporation, the Rand mining finance house which pioneered the new field and is the chief participant.

Diamond Sales Break All Records

Sales of diamonds, both gem and industrial, by the Central Selling Organization during the first quarter of 1955, have expanded to the impressive total of more than £22,100,000—comprising £15,200,000 from the sale of gems and £6,900,000 from the sale of industrial stones.

The expansion in sales of industrial stones to a record level reflect alike the continued stockpiling activities of the U.S. Government and also the steady upturn in the U.S. economy. In so far as sales of gems are concerned and

running as they are at the fantastic annual rate of £60,000,000 per year, it is as well to remember that there was at least one special factor operating to push these sales to such a high level.

Indeed, the loss of approximately £1,000,000 worth of gem stones near Prestwick, Scotland, just before the close of last year is understood to have created an acute shortage of stones for the polishing and cutting trades in America. Thus demand to make up this deficiency has helped to augment what would have been, in any event, much increased sales.

The outlook for the remaining nine months of the year must be considered very good indeed. The demand which raised the March quarter's gem diamond sales to record levels is, if anything, increasing in the U.S., a fact which may help to offset the non-recurring "windfall" arising from the Prestwick aircraft disaster. Further, there is no reason to think that the rate of stockpiling of industrial stones will be reduced in the months ahead, while the solidly based resurgence in the U.S. economy—apparent over the last seven months—should continue to keep the demand for industrial stones at a very high level.

Technology Outpaces Metallurgy

The shortage of suitable metals is delaying the progress of technology and the completion of many new devices. It has been asserted in university circles in the United States that many technological devices have been designed but cannot be built because of the lack of metals possessing the adequate properties to ensure efficient construction. Indeed, currently available metals and metallurgical techniques are claimed to have imposed limits beyond which almost every phase of technology, such as power generation, transportation, communication and production, cannot advance.

In support of these claims W. D. Robertson, associate professor of metallurgy at Yale University, has pointed out that jet engines already designed could eclipse any in existence, yet the new designs employed require operations at such a high temperature that common metals and alloys would deteriorate or melt after a few hours' of use.

The choice of a metal of high melting point is not enough to ensure the successful production of the new alloys demanded, as cost and fabrication difficulties are important factors. Some progress has been made in the last few years, a good share of the credit for which is owing to metallurgical development.

Professor Robertson has discounted the possibility that a new metal would be developed to replace those now in existence. The materials necessary for modern technology would only be made available if more metallurgists performed the necessary research and put their findings into practice.

Florida's Mineral Potential

With the advent of atomic power the production of titanium may become an established industry in Florida, United States, according to a recent report in *American Metal Market*. Indeed, Florida now ranks second to New York State in the production of titanium-bearing minerals, the principal Florida workings being two mines operated by the Humphreys Gold Corporation for E. I. du Pont de Nemours and Co. These two mines are situated respectively east of Jacksonville and in the vicinity of Starke, while a third development on behalf of the du Pont organization is approaching completion near Lawley, not far removed from the Starke deposits. Other operations include those of the Crane Company, which for the past six months has been prospecting along the west coast beaches

and is reported to be ready to commence mining operations to supply ilmenite for its new processing plant in Tennessee.

Florida's entire ilmenite output at present is concentrated beyond the borders of the State, and it is contended that by use of atomic energy as a motivating force this processing could be carried out more economically near the source of supply. One of the most obvious economies would, of course, be a substantial saving on railway transportation.

Atomic energy might also provide a potent factor in the further development of uranium extraction processes from a phosphate rock source. Uranium is found within a short distance of Tampa, where U308 occurs as a by-product of phosphate mining operations. It is estimated that less than a quarter of a pound of uranium oxide is won from a ton of phosphate ore, although the 39,000,000 tons of phosphate ore mined in 1952 revealed how substantial this output really could be when it is realized that from this production some 10,000,000 lb. of U308 could have been recovered.

Despite the fact that only approximately 7/10th of one per cent of this uranium would be in the form of the fissionable material U235, and that only a few thousand pounds of U235 actually would be produced from 39,000,000 tons of phosphate ore, it is nevertheless impressive that each lb. would be as effective as approximately 1,300 tons of coal.

The Rhodesias

(From Our Own Correspondent)

Salisbury, March 30.

An expedition, backed by American capital, is to begin a search for uranium in Southern Rhodesia next July. The site of the first prospecting operation is expected to be the Mafungabusi Plateau, about 80 miles west of Gatooma. The terrain there is recognized as being similar to that of the petrified forest in Arizona, the site of rich deposits of radioactive material. The second exploration will be made in the Chimanmani Mountains, east of Melssetter, and near the border with Portuguese East Africa. A possible third site is at a point west of Kariba Gorge. A spokesman for the Johannesburg agency which is to conduct the explorations said that if suitable deposits of radioactive material were located the agency would float an operating company in the Federation.

COAL NEWS

There is to be no reduction in the price of coal in Southern Rhodesia, at least until November this year, according to a statement by the Southern Rhodesia Minister of Mines, Mr. Davenport, in announcing a joint decision by the Government and Wankie Colliery Co. The Minister said that there had been a remarkable recovery by the railways from the effect of the strike last year, and that coal-carrying capacity was now keeping pace with production. Furthermore, the Wankie company had succeeded in further reducing working costs, although the time was not ripe for an adjustment in coal price.

The Wankie company started the year with a heavy deficiency in the revenue due to it, and although entitled to an average price of 19s. 7d. a ton this year, the company had agreed to an average price of 19s. 3d. If no unforeseen circumstances arise, and if railway performance continues at its present level, it is hoped that a reduction in the price of coal may be possible when a revision of prices is made in terms of the Government's agreement with the company. The revision will take effect from November 1.

Mr. B. D. Goldberg, Federal M.P. for the Eastern Districts, stated recently that the Anglo-Transvaal Mining Co. was prepared to start a colliery in the Sabi Valley. In April the company proposes to examine another coal seam in the Malilongwe area, where there are also iron ore reserves. The company's interest in Sabi coal and iron deposits has been stimulated by the construction of the Bannockburn-Pafuri railway line. A connecting line from the coalfields to this new link would be about 40 miles long and would cost less than £1,000,000, including the construction of a bridge. The greatest deterrent in the past to the development of mineral deposits in the Sabi Valley has been the lack of transport facilities.

KARIBA PROJECT CONFIRMED

Mr. Andre Coyne, consultant to the Government of the Central African Federation has again pronounced in favour of the Kariba hydro-electric scheme. Although the alternative Kafue project in Northern Rhodesia was excellent, he was of the opinion that Kariba on the Zambesi was the better scheme. On March 1, Sir Godfrey Huggins, the Federal Prime Minister, announced the Government's decision to proceed with the Kariba project, thus reversing a previous agreement between Southern and Northern Rhodesia to start first on Kafue. A World Bank mission is expected in Salisbury on April 9 to investigate the project.

The site chosen for this scheme is reported as excellent in every respect, as the rock foundation was exceptionally hard and free from cracks and there was no danger from silting. Mr. Coyne thinks Kariba would produce the cheapest power in the world. He hopes to cancel three or four of the diversion tunnels at Kariba, a factor which would effect considerable saving in cost.

An energetic campaign has been conducted in Northern Rhodesia in opposition to the Federal Government's decision, but it has mainly taken the form of recrimination. There has been considerable dissatisfaction in the north at the alleged failure of the Federal Government to consult the Territorial Government before announcing its decision. There have even been dark threats of a break in the Federation. All this was to be expected for Northern Rhodesians set great store by the Kafue scheme, and their disappointment at the decision of the Federal Government to proceed with Kariba has led to a not unnatural reaction.

Yet it has been pointed out by various Federal Government spokesmen that it would be inadvisable at this stage to allow yet another change of mind on the hydro-electric power projects. It is pointed out that overseas confidence in the Federation would be seriously shaken should the Government waver on the issue and, furthermore, internal dissension in the Federation would also tend to discourage overseas investors. It seems at the moment that the Government will stick to its guns, and no doubt the storm of protest in Northern Rhodesia will subside leaving the way clear for a whole-hearted and concerted effort to be made on establishing the urgently-needed power supplies for the Federation as a whole.

TIN IN THE CHOMA DISTRICT

A new company, Choma Mines Ltd., with a modest nominal capital of £100, has been registered in Northern Rhodesia for the purpose of acquiring certain tin claims in the Choma district. It is learned that the new company will become a subsidiary of Rhodesian Selection Trust and that it will in due course examine the tin prospects in the Choma area. Tin has been mined in the Choma district for some years on a very small scale. Value of tin produced in Northern Rhodesia in 1953 was slightly under £5,000; in 1954 it was £587.

A Survey of the Algoma Uranium Area

By ALBERT HOPKINS, B.A.Sc., P.Eng., M.C.I.M., F.G.A.C., M.E.I.C.

The discovery of the Algoma Basin, usually called Blind River, uranium deposits in Canada was fully described in *The Mining Journal* of March 11, 1955. The following article presents more specific details of the geological formation of the Algoma Basin, as well as the estimated potential output which can be expected when full-scale operations commence, and concludes by listing the major company holdings of the area. The author, of Hopkins Exploration Consultants, gives interesting tabular information which is conservative in its estimates.

The basement rocks of the Algoma uranium area are made up of granite, granite gneiss, and altered layered types of medium to basic composition, in different proportions. The Huronian-age rocks rest unconformably on, or intrude, the truncated pre-Huronian basement. The Huronian sediments consist mainly of three rock types—conglomerate, quartzite, and shale. Greywacke, grit, and siltstone are also found, but only in minor amounts. The rocks classified as quartzite also include arkose and sandstone.

Three types of conglomerate occur within the area, namely, boulder conglomerate, quartz-pebble conglomerate at or near the base of the sedimentary group, and intraformational conglomerate within the sediments. Only the quartz-pebble conglomerate is of economic interest, since it is in this rock that the uranium-bearing minerals are found. Quartzite is the most abundant rock type in this group. The term quartzite is here used loosely as in the area described it also includes arkose and sandstone. In the vicinity of the presently-known ore-bearing conglomerates, the rock is more correctly an arkosic sandstone. It is commonly sea-green, coarsely-grained, with individual grains of quartz ranging from $\frac{1}{4}$ to $\frac{1}{16}$ in. in dia. and occasional grains of feldspar, embedded in an arkosic matrix. Bedding ranges from obscure to markedly cross-laminated.

Shale occurs interbedded with the quartzite and usually near the quartz-pebble conglomerate. At the Pronto mine it underlies the ore-bearing conglomerate as thin local

lenses, while at the Algom-Quirke mine it forms a thick, well-defined bed overlying the ore-bearing conglomerate. The Huronian sediments generally have flat dips, and their eroded remnants from a synclinal or a great double reverse "S" or a "Z"-shaped pattern, each limb measuring from 25 to 30 miles in length. There are thus the South, Middle, North, and Rawhide belts, all east or west trending, and connected by sedimentary folds.

The South belt appears as an east-trending syncline, whose present axis is marked by a regional fault zone. North of the fault zone the basal section of the Huronian sediments (containing the Pronto orebody) dips gently from 15 to 30 deg. south. South of the fault zone, the sediments in general dip vertically or steeply north, and show evidence of moderate to intense dynamic and thermal metamorphism. The Middle and North belts of Huronian sediments in the Algoma district appear related as the limbs of a west-plunging synclinal fold. The Middle belt dips gently north at 10 to 25 deg., while the North belt dips more steeply south at 25 to 35 deg.

The amount of folding to which the Huronian sediments have been subjected is conjectural. Except along the south edge of the South belt (in close proximity to the Murray-Worthington fault), and along the North belt with its relatively steep dips, one gathers the strong impression that most of the South belt, all of the Middle belt, and some of the North and Rawhide belt sediments now occupy attitudes

KNOWN URANIUM DEPOSITS OF THE ALGOMA AREA

Twp	Property	Development	Twp	Property	Development
Long	Pronto Uranium Mines Ltd.*	Mill being erected	144	Can Met Explorations Ltd.†	Drilling now diam. drilling
161	Dominion Uranium Corp.†	Diamond drilling	150	Consolidated Denison†	Diamond drilling shaft planned
155	Peerless Uran. Min. Corp.†	Diamond drilling	150	Algom—Quirke Lake†	5-comp. shaft complete mill on order
161	Brunette Porcupine†	Diamond drilling	150	McMarnac a	Diamond drilling
Mack	Algom — Pistol Lake†	Diamond drilling	156	Uranium King a	Deep diamond drilling
161	Consol. Matarrow & Saphire†	Surface pits	156	Consol. Orlac†	Diamond drilling
161	Anabart	Drilling	1-A	Montgomery-McKinnon†	Surface showings
161	Rochester & Pittsburgh Coal Co.†	Drilling — no news published	1-A	Montgomery et al†	Surface showings
161	**Big Games Mines†	Diamond drilling	1-A	Urco Mines†	Surface showings
155	**Gui-Por Uranium and Metals†	Diamond drilling	1-A	Jos. Kilgour (former Noranda)†	Surface showings
161	**Moon Lake Uranium†	Diamond drilling	U	Ontigan Exploration†	Surface showings
143	**Calder Bousquet†	Diamond drilling	U	Belfast Mines (former Mat-taini)†	Drilling showings of pitchblende
155	Algom — Elliot Lake†	Diamond drilling	Many	Stancan Uranium Corp.†	Diamond drilling
149	Algom—Nordic Lake†	Shaft sinking	Many	Panel Consol. Uranium Mines Ltd.†	Diamond drilling
149	Buckles Algom†	Shaft sinking	Many	Pardee Amalgamated Mines Ltd.†	Diamond drilling
149	Lake Nordic Uranium†	Diamond drilling			
149	Stanleigh Uran. Corp.†	Deep diamond drilling			
143	McIntyre Porcupine†	Diamond drilling			
143	Magoma Mines a	Diamond drilling			
143 &					
137	Algom—Pecors Lake a	Diamond drilling			
137	Grande Chibougamau†	Diamond drilling			
143	San Antonio a	Diamond drilling			
144	Roche Long Lac†	Diamond drilling			
144	Conecho Mines†	Surface showings now diam. drilling			
144	Emerald Glacier†	Surface showings now diam. drilling			

Outlying Sections

4D	Aubrey Falls†	Surface showings
5E	Seabrook Lake†	Surface showings
Hyman	Agnew Lake†	Surface showings being drilled
Plummer	Bruce Mines†	Surface showings drilling planned

PROSPECTS : * 1,000 tons per day 1955
Note—** controlled by New Jersey Zinc

† fair ‡ excellent § small tonnage — good grade ¶ very good a good

SOME INDICATED ALGOMA URANIUM ORE RESERVES
(estimated from 1954 figures)

Property	As far down dip slope as has been drilled				If continuous across property	
	Ore Reserves (Tons)	Grade (%)	lb. U308	Value at \$10 lb.	Ore Reserves (Tons)	Value at \$10 lb.
Algoma Quirke Lake ..	7,463,500	0.106	15,820,000	158,200,000	44,781,000	949,200,000
Algoma Nordic ..	6,171,000	0.113	13,930,000	139,300,000	18,513,000	417,900,000
Buckles Algoma ..	486,500	0.124	1,210,000	12,100,000	500,000	12,400,000
Pronto Uranium ..	3,000,000	0.130	7,800,000	78,000,000	5,000,000	130,000,000
Totals & Averages..	17,121,000	0.113	38,760,000	387,600,000	68,794,000	1,499,500,000

not very different from those at which they were formed. The similarity in size, distribution, and attitude of the Algoma ore-bearing conglomerates to the presently elevated post-Pleistocene gravel beaches inland from the east shore of Lake Superior is very striking.

The ore material of the Algoma district commonly consists of unoxidized conglomerate, but occasionally a red-coloured haematized and/or albitized arkosic grit carries high values, often as visible pitchblende. There are no recognizable introduced gangue minerals in these deposits such as silica, silicates, or carbonates. The ore consists of sulphides and oxides distributed throughout sedimentary formations of normal appearance and composition. The metallics of the ore are almost entirely confined to the green-coloured chlorite-sericite matrix which comprises about 35 per cent of the conglomerate by volume. The minerals present are pyrite and/or pyrrhotite, chalcopyrite, galena, molybdenite, rutile, anatase, scheelite, cobaltite, magnetite, and gold. The uranium-bearing minerals in order of abundance are brannerite, pitchblende, uraninite, and thucolite. The pyrite and/or pyrrhotite content of the ore ranges from 3 to 15 per cent by weight and averages about five per cent; all other minerals named are very sparsely distributed and only occasionally seen by the unaided eye.

OCCURRENCES OF MINERALS OF ECONOMIC INTEREST

Of the minerals of economic interest, brannerite (the uranium titanite containing about 40 per cent U308) is the most plentiful. It is widely and uniformly disseminated as fine-grained wispy cloud areas in the quartz-sericite matrix. Photomicrographs display this mineral as a matted area of small prismatic crystals; as an intergrowth structure with pyrite; or associated with anatase. Pitchblende is much less plentiful than brannerite. It has been seen in Pronto drill-core material as massive fracture fillings up to $\frac{1}{4}$ in. wide. Photomicrographs reveal that some of the pitchblende is colloform. It is noteworthy that where visible pitchblende has been seen, the adjoining rock is haematized.

Thucolite (a uranium and thorium-bearing hydrocarbon mixture) has been recognized to date only in specimens of Quirke ore. Here it occurs as fresh-looking glossy "bubbles," up to $\frac{1}{4}$ in. in dia., encrusting the walls of small, open, oxidized and leached fractures. Its appearance lends plausibility to the theory that it may be the late product of interaction between some active uranium mineral and a circulating hydrocarbon gas such as methane.

The mineralogical features of the Algoma district are strikingly uniform. The few variations follow a pattern of gradual change. The most notable apparent changes are:

- (1) A gradual increase in pyrrhotite and decrease in pyrite as one proceeds from the South through the Middle to the North belt.
- (2) A slight increase in the thorium content of the ores as one proceeds from South, to Middle, to North belt.

- (3) The appearance of trace quantities of molybdenum, cobalt and nickel, and uranium in the "thucolite" form, in the North belt ores.
- (4) In the Rawhide belt the relative absence of pyrite and abundance of haematite as the mineral associated with uranorthorite and thucolite. In this belt also occurs pitchblende and thucolite in fractures in diabase and Killarney granite. These deposits are associated with copper and cobalt minerals.

IMPORTANCE OF BASAL HURONIAN SEDIMENTS

Nearly all the known uranium-bearing ore of present importance is found in quartz-pebble conglomerate, within the basal 100 ft. of the Huronian sediments (Collins' Mississagi quartzite). The quartzite (more properly arkose) containing the ore-bearing conglomerates is characteristically cross-bedded green-coloured. It will be noted that more than one conglomerate bed can be present and, in the case of the Quirke deposit, several beds are separated by uranium-bearing quartzite, locally providing zone widths up to 50 ft. that may be mineable.

Lithologically, the conglomerate consists of well-rounded pebbles of white, pink, or glass quartz, quartzite, and chert, in a once gritty matrix now largely altered to green-coloured chlorite and sericite. The pebbles are remarkably uniform in size and range from $\frac{1}{4}$ to 2 in. in dia. The ratio of pebbles to matrix is estimated to be 65 to 35. It is the matrix that is mineralized.

The rock is a typical oligomictic conglomerate characteristic of marine transgression over a surface of low relief. The contacts above and below the conglomerate are most often abrupt. One or more quartz-pebble bands only a single pebble thick (about 1 in.) and possibly containing pyrite and uranium, occur in many places above a thick conglomerate bed. Where the main conglomerate bed is basal (as at the Pronto mine) it will be underlain by 5 to 15 ft. of grit similar in composition to the basement rock. Locally at Pronto, thin lenses of argillite underlie the conglomerate, and at Quirke a 60-ft. thickness of argillite overlies the thick conglomerate series. The composition of the bedrock, whether granite, gneiss, "greenstone," or sediment, appears to have no influence on the mineral content of the overlying conglomerate.

LOCATION OF ALGOMA URANIUM MILLS

A mill using the modified acid leaching process is being built at Pronto Uranium Mines Ltd., and will begin production by September, 1955, at a capacity of 1,000 tons per day. This output will be increased to 1,500 next year. The mill is situated near the shaft in Long Township. A 3,000-ton mill which will use the same process as the Pronto unit is on order for the Algoma Quirke Lake property and should

be in operation by early 1957, while a similar mill is planned for Algom Nordic Lake. Output of this latter mill will be 2,500-3,000 tons and production will, it is thought, probably begin by 1957.

Meanwhile McIntyre Porcupine states that enough ore exists on its holdings to supply 500 tons daily provided a good uranium price is offered. No other companies have reached the stage of planning their mill units yet, but it is believed that in the near future Consolidated Denison, Roche Can-Met, Buckles Algom and Lake Nordic will be considering mill installations and that later many other companies will follow suit.

SOME ESTIMATED RESERVES

Of all companies in the area, the four most advanced in their production planning are Buckles Algom, McIntyre Porcupine, Lake Nordic and Consolidated Denison. These companies *in toto* have a potential ore area totalling 75,500,000 sq. ft. and a potential of 75,000,000 tons, although these figures are estimates only. Viewed individually, Buckles Algom has an area of potential ore totalling 500,000 sq. ft., a potential tonnage of 500,000, and may mill at the adjoining Nordic property; McIntyre Porcupine's area of potential ore covers 20,000,000 sq. ft. and the mine has a potential tonnage of 20,000,000; Lake Nordic and Consolidated Denison are still drilling, the former to prove a potential ore area of 30,000,000 sq. ft. which might produce 30,000,000 tons, and the latter over 25,000,000 sq. ft. of potential ore of a possible 25,000,000 tons output.

These four companies, however, have no mills planned. The figures presented are calculated on area times 12 ft. average thickness at a price of \$10 per lb. uranium.

MAJOR COMPANY HOLDINGS

A brief survey of the major company holdings in the Algoma area shows that Algom Uranium Mines Ltd. owns claims totalling 27,120 acres in extent. Of these the Quirke Lake property of 166 claims on Township 150 covers 6,640 acres, Elliot (Nordic) on Townships 149 and 155 covers 11,600 acres in 290 claims, the 170 claims of Pecors Lake covers 6,800 acres on Townships 137 and 143, while on the Townships Mack and 161 Pistol Lake's 52 claims are 2,080 acres in extent.

On Long Township, Pronto Uranium Mines Ltd. has 81 claims forming the main property of 3,240 acres, while in Spragge Township a further 58 Pronto claims cover 2,320 acres. Lake Nordic Uranium Mines Ltd. possess 25 claims comprising 1,000 acres on Township 149, Buckles Algom U.M.L. 66 claims covering 2,640 acres on the 149 and

Esten Townships, and Peach Uranium and Metal Mining Ltd. have 133 claims totalling 5,320 acres at Sheddont Township.

Preston East Dome covers 1,200 acres on approximately 30 claims in Long Township and 1,600 acres or about 40 claims in Lewis Township. In Township 150 Consolidated Denison Mines Ltd. covers 3,320 acres in 83 claims, while Panel Consolidated Uranium Mines Ltd.—10 properties totalling 419 mining claims—controls 17,960 acres in several townships. In similar case, properties in several townships are owned by Pardee Amalgamated Mines Ltd., a concern formed by the amalgamation of 14 companies.

Three companies whose interests are widely scattered over the area are New Jersey Zinc Options, Plum Uranium and Metal Mining Ltd., and Stancan Uranium Corporation. In addition, 13 other companies are listed as possessing major holdings in the Algoma Basin. These are Uranium King Corporation, Roche Long Lac Gold Mines Ltd., Pater Uranium Mines Ltd., Dominion Uranium Corporation, Brewis and White, San Antonio Gold Mines Ltd., Stanleigh Uranium Corporation, McIntyre Porcupine, Teck Hughes, Cusco Mines Ltd., New Kelore, Lexindin Gold Mines Ltd., and Spanish American Mines Ltd.

POTENTIAL OF UNEXPLORED RESERVES

The estimated possible tonnages and values of uranium ore laying under land as yet unexplored offer tremendous potentials. The table on this page is based on a mass of 12 cu. ft. per ton, an average thickness of 12 ft., with a price for the leached product of \$10 per lb. and allowing for only 50 per cent of excavated matter to be ore. It will be observed that, on the assumed figures, the 15 townships covering approximately 540 sq. miles offer an estimated value of payable ore totalling \$40,600,000,000.

The following estimate of the expenditure necessary to develop unexplored Algoma ore reserves equal to those presently indicated by the operations carried out by the four major companies is based on the estimates and experience of Pronto Uranium Mines Ltd. The mining of some \$70,000,000 worth of ore is anticipated—with the possibility of nearly double that value in fact—for a total expenditure of \$7,000,000. This expenditure will comprise development and equipment costs, the outlay in reduction plant and surface services, as well as "tune-up" expense, stores and interest charges.

It is estimated that mining and milling costs at 1,000 tons per day will be about \$12.50 per ton. After allowing for 12½ per cent mining dilution and 10 per cent tailings loss, the 0.13 per cent ore will be worth \$20.50 per ton, leaving an operating profit of \$8 per ton.

Due to deeper overburden, probably lower average grade, and the outlying situation, one must assume average recoverable ore value per ton of \$19 and average operating costs per ton of \$14, providing a total operating profit of \$5 per ton.

To develop Pronto's indicated 3,000,000 tons and potential 5,000,000 tons, required 225 drill holes totalling 51,657 ft. of drilling. At a total overall average cost of \$5 per ft., this would be about \$250,000. This amounts to almost 10 c. per ton of indicated ore and 5 c. per ton potential ore.

Now, assume that on other properties, due to deeper drilling and transportation problems, this cost was double that of Pronto's. Then the cost would be approximately 10 c. per ton of indicated ore. Therefore the cost to develop an equivalent new tonnage of ore as that now indicated by the four major and pioneer companies of Blind River would be 17,121,000 x 10 c. or \$1,712,100.

POSSIBLE ORE UNDER UNEXPLORED LAND
(estimated)

Township	Tons (000,000)	Grade %	Value (\$000,000)
Sheddont*	30	0.10	600
Lewis*	30	0.10	600
Spragge*	30	0.10	600
Long†	90	0.10	1,800
Striker‡	200	0.10	4,000
Mack	200	0.10	4,000
161	200	0.10	4,000
155	200	0.10	4,000
149	200	0.10	4,000
143	200	0.10	4,000
137	100	0.10	2,000
138	50	0.10	1,000
144	150	0.10	3,000
150¶	175	0.10	3,500
156§	175	0.10	3,500

* Long narrow potential strip everywhere † not including Pronto ore ‡ Mississagi
everywhere || Mississagi almost everywhere ¶ not including Algom
ore § all but NE corner favourable

The Sulphur Crisis in Sicily

Early in March the Sicilian sulphur producers unanimously decided to close the sulphur mines and processing plants of the island on March 20, and to dismiss the labour force of approximately 12,000 workers. This decision was brought to the notice of the general public by a communiqué issued by Federazione degli Industriali della Sicilia (Sicindustria). The following article is a condensation of the facts presented in the communiqué, and outlines the reasons for the decision to close the mines.

The communiqué published recently by Sicindustria pointed to the backward development of the Sicilian sulphur industry since late in 1952. The communiqué underlined that since that time Sicilian sulphur producers had been pressing for financial assistance from the government to enable them to modernize their antiquated mining and processing plants. In addition, the revival of minimum prices was proposed, a system which had operated between 1940 and 1950. An alternative demand concerned the granting by Ente Zolfi Italiani, the Italian Sulphur Control Board (a government agency), of prices covering at least the cost of production.

Despite promises and certain legislative measures, however, the communiqué emphasized that the sulphur industry in Sicily had had no actual relief and no effective help. The law of August 12, 1951, for the redevelopment of the Sicilian sulphur industry, had proved inefficient, or nearly so. Provisional alleviations had, in the long run, only aggravated the industry's financial problems, and moreover, these measures had come to an end as from December 31, 1954.

The communiqué also pointed out that the new measures taken by both the Central government in Rome and the Regional government in Palermo—said to be "in the making"—could hardly improve the position of the industry. As far as the sales prices for sulphur were concerned (fixed by the "Ente Zolfi Italiani") these were lower than the costs of production and inadequate in view of the market pressure exercised by unsold stocks of sulphur in Sicily totalling at present some 350,000 tonnes as compared with stocks prior to the Korean war which averaged 250,000 tonnes. These totals far exceed the annual production of raw sulphur in Sicily, which (in tonnes) was 201,455 in 1949, 213,132 in 1950, 200,549 in 1951, 236,439 in 1952 and 227,757 in 1953. In the first five months of 1954, 82,700 tonnes were produced as compared with 90,800 tonnes for the same period in 1953.

It was also reported that the productivity of the workers was declining, as continuous strikes and social unrest arising therefrom were a hindering factor. From all parts of the sulphur mining regions there came reports of occupations of mines and processing plants by the workers.

In view of the state of affairs, the sulphur producers had decided to cease operations as from March 20.

LACK OF GOVERNMENTAL ASSISTANCE

Sicindustria has commented that that decision was the outcome of two years of vain promises of assistance from the government and was also the product of unjustified official optimism. At the most critical moment, Rome was announcing measures which at the soonest could only become operative in a few months. The question was whether they would be effective at all. As far as the interested circles in Palermo knew, they were only half-measures, and were bound to be supplemented by additional provisions from the regional government at Palermo. After the restoration of the mines and other plants which had been flooded or devastated in the Allied landing in 1943, there had followed a short period of revival although the profits so secured had not been sufficient to compensate for the damage suffered. The long drawn-out crises under which the

sulphur industry had been labouring for years had wholly destroyed its credit standing, and the Banco di Sicilia had stopped any further advances.

Recently, the seriousness of the position prompted the central government at Rome to take steps, in co-operation with the Ministry of Industry and Commerce and in consultation with the Ente Zolfi Italiani, to prevent the situation from deteriorating, although the request by the government for modernization schemes and the financing of the work seems to point to a long-term policy. On the other hand, the financing of unsold stocks is being considered, as also are subsidies designed to revive exports. The drop in exports has been catastrophic, namely from 80,256 tonnes in 1951 to 51,619 tonnes in 1952, 6,953 tonnes in 1953 and a bare 759 tonnes in 1954, of which 50 tons were exported during the first five months, as against 199 tons during the same months in 1953, and 25,617 tons during the same period in 1952.

It would seem that this drop has been the outcome of the expanding Californian competition and its favourable prices, and of the inability of the Sicilian sulphur industry to adapt itself to these hard facts. In the past months the difference in the cost of production between the foreign and the Sicilian sulphur has been climbing to 15,000 and 20,000 lire per ton. During the second half of 1953 the sales price for United States sulphur was the equivalent of lire 20,000 a ton in contrast with a production cost of lire 50,000 a ton for Sicilian sulphur.

CAUSES OF REDUCED PRODUCTION

The roots of this development are well-known. On the one hand, modern extraction and processing methods abroad are in keeping with favourable costs and prices; while in Sicily, on the other hand, the adherence to antiquated production methods promotes uneconomic extraction. In California an average of three men is needed for the production of two tonnes of sulphur, in Sicily the average is 44 men for the same output. There are, of course, exceptions in Sicily, although the case of the Minniti Aragona mine which gives work to some 370 miners is typical of the general position. This mine is one of the most backward in the whole of Sicily and the workers are being paid on the basis of the mine's productivity. Recently the regional government at Palermo had to grant an urgent allocation of lire 150,000,000 to enable the concern to pay arrears in wages in order to prevent the situation from getting out of hand.

Contrasting with this there do exist a few mines and processing plants where production has been modernized and rationalized. A case in point is the Cozzo Disi mine, Enna Province, where some 800 miners are employed. This concern has, since 1950, completely modernized and rationalized all its workings at a cost of lire 600,000,000. It is this enormous conversion and reconstruction expenditure that hinders the general modernization of the Sicilian sulphur industry. The industry is not in a position to finance large-scale reconstruction from its own resources.

The law of August, 1951, referred to above, envisaged a total of lire 9,000,000,000 to be placed at the disposal of the Sicilian sulphur industry by the State exclusively for modernization purposes. The deteriorating position

prompted the government in February of this year to increase that amount to lire 12,000,000,000, although the law cannot become operative for as long as the Banco di Sicilia refuses, as it is doing, to guarantee the loans to be made to the industry. Thus, apart from half-hearted temporary measures nothing really effective has been done to put the sulphur industry on its feet again.

One of these half-measures was the granting in August, 1954, of a loan of lire 1,000,000,000 by the central government to Ente Zolfi Italiani to enable this body to offer temporary aid to the industry. Similar measures designed to overcome critical situations have occurred frequently in the Sicilian sulphur industry in recent years and have absorbed not less than 31,400,000,000 lire between 1946 and the end of 1953. The financing of the unsold sulphur stocks alone would absorb some 2,000,000,000 to 3,500,000,000 lire—not included in the 12,000,000,000 lire previously referred to either in the form of exports—at prices below production

costs—or in the form of advances and interests until higher world market prices would again allow remunerative sales.

In so far as current prices are concerned, American raw sulphur has been averaging in recent months the equivalent of lire 31,000 per tonne free European ports (November, 1954), contrasting with the average for Sicilian raw sulphur of lire 50,000 per tonne f.o.b. Sicilian port. Prices in Italy are fixed by the Ente Zolfi Italiani which handles also actual exports.

On the face of it the Sicilian producers communiqué as summarized above seems to confirm that the sulphur industry in Sicily has been left with no other alternative than closure. The subsidy of 1,000,000,000 lire being paid at present by the Ente Zolfi Italiani, and which works out at an average of a modest 3,500 lire per tonne produced (approximately £2) since July 1, 1954, just enables wages to be paid and cannot be regarded as a useful incentive to production.

TRANSPORTABLE EQUIPMENT—II

Transportable Milling Equipment for the Mining Industry

In our issue of April 1, 1955, it was pointed out in the first portion of this article that prospecting and mining in under-developed regions was promoted the design and construction of transportable equipment suitable for the mobile mining camp. While many of these units, such as trailer caravans, have been the subject of previous articles in *The Mining Journal*, the step taken by the Denver Equipment Company, United States, in the construction of mobile laboratories and treatment plants for use in less accessible areas, adds considerably to the conception of the self contained mobile mining camp. The final instalment, appearing herewith, discusses the use of portable milling equipment.

Transportable placer units incorporating the Denver mineral jig as the principal item are available for the recovery of values from alluvial sources. They can be used for the concentration of gold and black sands from auriferous deposits and for the recovery of other heavy minerals such as tin, tungsten, platinum, or metallic sulphides. Units of this type have also been used for reclaiming values from old tailing deposits.

MOBILE PLACER UNITS

In many placer deposits the values are associated with clay or cementing materials and with masses of black sand. In order to secure concentration of the mineral particles, both coarse and fine, the gravel requires to be thoroughly disintegrated and washed. The material to be treated is shovelled or dumped into a large feed hopper and is then fed regularly into the washing and disintegration section of a rotating trommel. The disintegrating chamber is equipped with spiral lifting blades which elevate and mix the gravel. Water is added at the feed end of the machine and through the action of the lifting blades the lumps are broken.

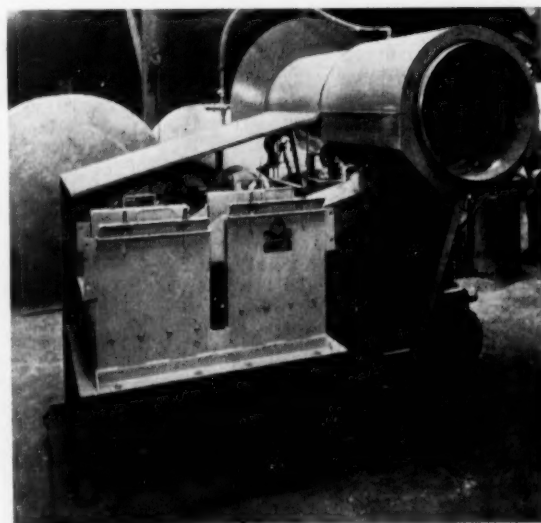
The material then passes on to the screened section of the trommel for the removal of large particles. This comprises an inner section of heavy perforated plate surrounded by an outer replaceable steel wire screen of appropriate mesh. The washing action is continued throughout the screening process. The material going through the screen is caught in a hopper and passes to the Denver mineral jig, in which the heavy particles are separated from the light gangue by a selective gravity concentration.

The unit is powered by a petrol engine or an electric motor, which also drives a centrifugal water pump, supplying water for washing in the trommel as well as for use in the jig operation. The entire plant is mounted on a steel base with steel sides for easy transportation.

Under proper management and financing, small, rich mines often have as good a chance of yielding profits as the larger properties. The capital available for development

is usually limited, however, and the owners are not always in a position to obtain the best engineering guidance. In almost any area where numerous small-scale operators are working, openings are presented for the profitable use of portable plant. The equipment might be operated on a custom basis by a private individual or company, or by a Mines Department. It might also be group-owned by the small operators themselves.

The advantages offered by mobile milling plant operated on the lines suggested are three-fold. In the first place, small operators are relieved of the necessity for heavy capital expenditure on surface equipment before underground development is sufficiently advanced to offer reli-



The trommel and mineral jig placer unit

able guidance as to future prospects. Secondly, small, rich orebodies can be worked without heavy capital expenditure on static equipment. Thirdly, it becomes possible for the flow to be altered at relatively low cost.

The economies which can be effected by means of small, transportable gold plants are attractive not only to the proved small mine, but also to properties under development. By taking advantage of the fact that gold is one of the heaviest metals known and readily forms an amalgam with mercury, effective but inexpensive transportable plants suitable for most small gold mines can usually be designed.

COMMERCIAL RECOVERY

Plate amalgamation, where the gold values are caught and held in the quicksilver film on a copper-plate, is sometimes the only step required for commercial recovery. In most cases, however, some of the gold is filmed so that it does not amalgamate readily, or is contained in ores with other minerals that also amalgamate or "foul" the quicksilver sufficiently to destroy its effectiveness for gold recovery. Here a form of selective concentration, such as the Denver mineral jigs and blanket tables, must be used to concentrate the gold values in a small bulk of high grade concentrates for treatment in an amalgamation barrel or other amalgamator, where the gold is amalgamated and recovered as bullion.

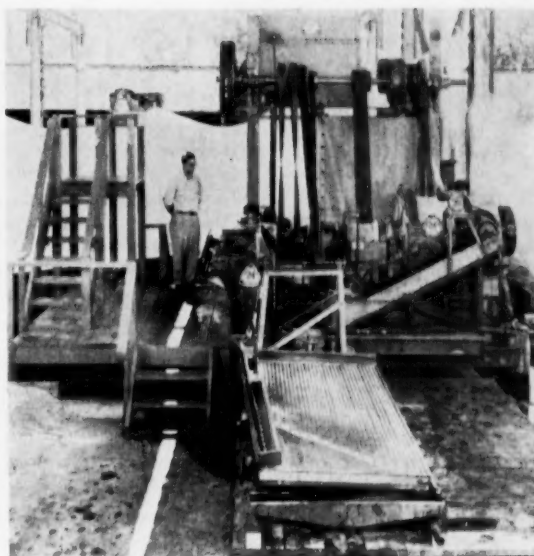
While cyanidation is usually advocated for maximum recovery of the values in bullion form, the fact that an amalgamation plant, whether static or mobile, costs far less to install and operate than a complete cyanide mill, partially offsets the lower recovery. Moreover, the tailings from the amalgamation plant are usually impounded and can be cheaply treated when mine developments have justified the erection of a cyanide plant. The recovery of 60 to 90 per cent of the values will usually supply sufficient revenue from the mill to pay for development charges and build a reserve for the construction of a cyanide plant.

MILLING GOLD ORES

Gold orebodies can be accurately sampled by milling all the ore from mine development work and all the errors resulting from ordinary sampling methods can be entirely eliminated.

Portable truck mills are available for the treatment of gold and many other ores. A feature of the Denver system is that any part of the flowsheet can be used or omitted, according to the treatment desired, due to the fact that the units are arranged on the truck to get maximum flexibility. Since only standard equipment is used in the flowsheet, the operator is able to try a number of different methods to obtain the best results. Additions can be made to the various items should it be desired to increase the milling capacity. The plants may be supplied with a diesel-electric generator unit for individually driven machines, or the necessary transmission equipment and engine for lineshaft drive may be provided.

For treating "free milling" gold ores where a high percentage of the values are free and where these values are unlocked at reasonably coarse grinding, a very simple and inexpensive flowsheet can be used. The ball mill is in open circuit and the size of the product to amalgamation plates is controlled by a spiral screen on the ball mill discharge. The concentrating table also functions as a classifier and the middling is returned as an oversize for further grinding. The addition of a mineral jig and amalgamator allows this equipment to be used for ores where values are coarse but minerals are coated or filmed, and will not amalgamate



A 5-ton portable mill

readily on plates. The jig recovers the "rusty" values in a high grade concentrate for "forced" amalgamation treatment in the amalgamator. On ores where this flowsheet is applicable, blankets, corduroy or gold matting are usually substituted for amalgamation plates and their concentrate also is treated in the amalgamator with the jig product.

The highest recovery possible for amalgamation and gravity concentration is obtained from a flowsheet having the ball mill in closed circuit with a classifier and the jig. The addition of the classifier allows finer grinding and the efficiency of the jig is greatly increased by using it in the closed grinding circuit. This flowsheet not only improves recoveries on ores, but is also useful where the minerals are fine and where metallic values are in auriferous sulphides as well as in the free state in the gangue.

The further addition of flotation recovers the slimes values that are normally lost where gravity concentration only is used. The values that can be amalgamated are secured in bullion form from the high grade jig and table concentrates, and the remaining values are recovered in the flotation concentrate. This flowsheet is also necessary where a minor percentage of the gold values is present as metallics at commercial fineness of grinding or where the minerals are friable and easily slimed in fine grinding—e.g., galena or the various telluride minerals.

FLWSHEETS FOR PORTABLE MILLS

A flotation gravity concentration plant in test assembly at Denver, Colorado, is designed for a crushing capacity of 8/10 tons per day and comprises a 5 in. x 6 in. jaw crusher, fine ore bin and feeder, 30 in. x 30 in. ball mill, 4 in x 6 in. mineral pig, 8 in. Esperanza drag classifier, 4-cell No. 8 flotation machine, No. 12 Wilfley table, No. 1 cone dry reagent feeder and a 12 in. wet reagent feeder.

Besides being transportable, these inexpensive amalgamation and concentration plants have the advantage of being simple enough for successful operation by unskilled labour, no chemical knowledge or previous experience being required. They are thus particularly suitable for the requirements of small operators engaged in the exploitation of scattered mineral reserves in remote areas lacking the facilities normally available in established mining fields.

Developments in the U.K. Coal Mining Industry

Many of the developments in equipment and in operational practice which aid the increase of output in the coal mining industry of the United Kingdom, arise from the experience of underground personnel. The following article describes some of these developments and shows their wide application in the industry.

A rotary valve in which an effective air seal is maintained by a simple adjustment of the radial clearance between the motor and the casing has been designed for handling granular or pulverized materials by a National Coal Board engineer.

Various methods are used in the design of rotary valves, or air seals, for providing an effective seal between the inlet and outlet ports. In this design, which is based on the plug cock principle, the sealing areas are confined to the interior circumferential surface of the casing and on the shafts there is spring-loaded adjustment for axial movement of the motor. With this adjustment any predetermined clearance can be obtained and maintained between the surface.

The valve casing has a frusto-conical internal chamber and on the rotor, discs are fitted to the ends of the vanes to prevent material passing round them. The design is such that as wear occurs at the sealing surfaces, the rotor can be adjusted towards the smaller end of the chamber so that an adequate seal can be maintained without dismantling the valve.

DISCHARGING COKE OVENS

A modification of the ray alignment used in the discharge of coke oven batteries has been designed at Rotherham Main Coking Plant, Yorkshire.

The object of the ray alignment equipment is to ensure that the coke pushing machine is in the correct position when preparing to discharge an oven so that it is in direct line with the coke guide on the other side of the oven. A projector lamp mounted on the coke guide throws a beam of light across the oven to the pusher, on which is fixed a photo-electric cell. The pusher cannot operate until the lamp and photo-electric cell are in alignment and the flap on the coke guide is down in position to receive the coke.

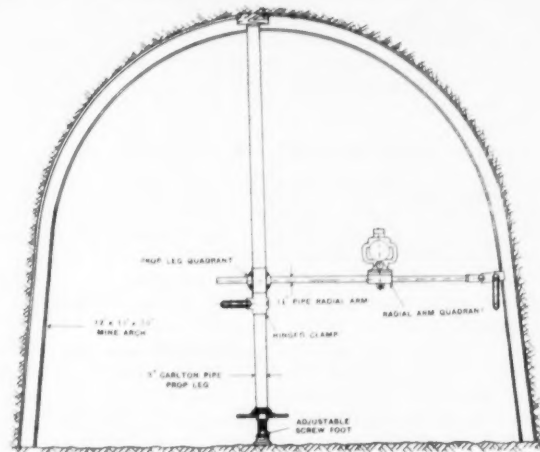
Sometimes, when this operation has been completed, the flap does not fall below the bottom of the oven because of some obstruction. The new modification overcomes this shortcoming by additional electrical contacts and suitable re-wiring so that the coke cannot be discharged until the coke guide and flap are in proper position.

In the modification, the relay contacts are wired in series with the front limit switch circuit of the pusher. Therefore, if the coke guide is not in place there is an open front limit circuit to prevent the pusher starting. When the pushing beam has moved forward about 16 in. a striking bar operates the interlocking switch which will close the extra contacts, thereby bridging the relay contacts.

DRILLING RIG FOR HEADINGS

A drilling rig named the Adams Rig, designed to operate in colliery headings at any angle through 180 deg. around a standard steel arch without the central prop being moved, has been designed, at Oak Victoria Colliery, Lancs. Two steel tubes, one vertical and one radial, are the main parts of the structure. The vertical tube has a rotary quadrant attachment which can turn through 360 deg. and can also be raised and lowered.

The radial tube is housed in the centre quadrant by telescoping into a second sleeve and is secured by a steel clip to the steel arch girder, which enables the radial arm to



The Adams drilling rig

travel round the perimeter of the arch. A rotary quadrant is also fitted to the radial arm to take the Victor drilling attachment, which enables the machine to reach any required angle from the side of the road to the centre and from floor to roof, including vertical drilling, without moving the centre prop.

Two or more drilling machines can be used at the same time on this rig, which can give better control and a considerable increase in the rate of road driving.

STOPPER FOR CAP-LAMP BATTERIES

A stopper which prevents leakage of electrolyte from cells in miners' cap-lamp batteries has been designed in No. 3 Area in the N.C.B.'s North Eastern Division.

The main problem has always been to release gas accumulations within the cells at the same time as preventing leakage. Various types of rubber diaphragm which would release gas pressure at 8 lb. p.s.i. pressure or over, have been tested, but have not been stable enough to operate at given pressure under all circumstances. More recently, a nylon stopper has been introduced, but it has not proved entirely satisfactory.

The new design is based on an entirely different principle in the final sealing on the battery. This involves charging the battery to atmosphere and sealing automatically by closing the cover. The stopper has an emergency gas release valve which operates at a pressure of 20 lb. p.s.i. The stopper is made of mild steel and is therefore practically indestructible. The only part requiring replacement is the rubber release valve, and it is considered this should give at least eight months satisfactory service before requiring renewal. The seal itself is spring-loaded with a dove-tailed rubber inset as the sealing medium. It automatically takes up any difference in levels of the three stoppers in the battery and any variations in the manufacture of various battery components. The complete seal is easily dismantled and assembled by the removal and replacement of a simple circlip.

In official trials held between May and July, 1954, 25

lamps were fitted with the new seals. During this time there was no evidence of leakage in any of the lamps. These lamps are still in use and are reported as having given excellent service.

A SPRAY FOR BELT CONVEYORS

Automatic control of the water delivered by sprays at conveyor transfer and loading points has long been considered necessary. It is undesirable that water should continue to flow when the conveyor is stopped or is running empty, yet at the same time, it is important that the spray should operate when material is being conveyed.

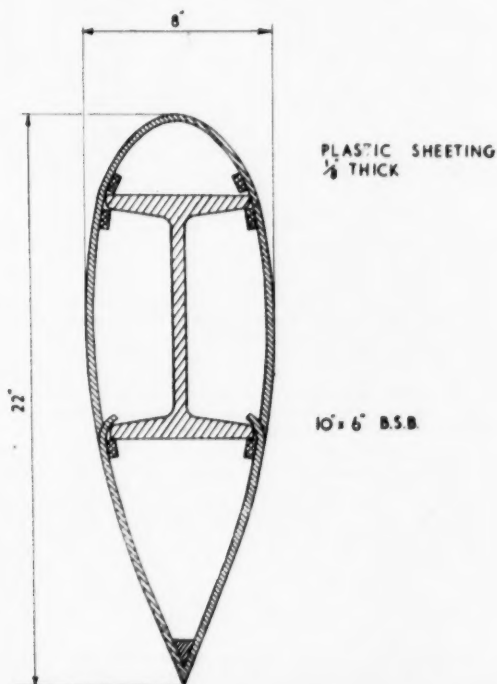
Now a device has been designed which automatically turns the spray on only when the belt is running and carrying material. A plunger-type valve, which was originally designed to control tub sprays, is used. The valve is fitted in an inverted position and held by side plates. A lever, fitted with a cam which is in direct contact with the valve plunger, is mounted on the side plates with the fulcrum at the top.

The attachment is fixed to the roof of the roadway and slightly in front of the conveyor's delivery roller. It is so positioned that the lever is vertically in line with the centre of the conveyor, with its lower end in the direct line of the flow of material. As the material falls from the conveyor it deflects the lever from the perpendicular position; this operates the cam which opens the plunger valve.

If the device is correctly mounted it will turn on the water even if there is only a thin trickle of gummings falling from the conveyor, but despite this fine control the water is turned off completely when the belt is empty. If the conveyor is heavily loaded the lever is pushed out of the way and valve remains open.

FAIRINGS FOR SHAFT BUNTONS

Many new collieries are now being constructed or planned by the National Coal Board to work deep, gassy coal.



The fairing for shaft buntons designed recently

Large quantities of ventilating air, approaching 1,000,000 cu. ft. per min., will have to be circulated through the workings of these mines.

Most of the main winding shafts are to be equipped with rigid guides instead of the rope guides commonly used in existing shafts. Rigid guides are usually fixed to horizontal buntons made from H-section steel joists spaced at intervals of about 10 ft. in the shaft, but these buntons add greatly to the resistance of the shaft to airflow, and, therefore, to the power required to force the ventilating air through it. A deep shaft passing a large volume of air and fitted with rigid guides will absorb a considerable amount of power, even though it may be 24 ft. in diameter. For example, a shaft 3,000 ft. deep and 24 ft. dia. fitted with buntons and passing 750,000 c.f.m. would absorb about 3 in. W.G., corresponding to a power consumption of 450 h.p. costing about £13,000 per annum, whereas the same shaft unobstructed by buntons would absorb only about $\frac{1}{2}$ in. W.G. It has been found from tests carried out on models in wind tunnels, however, that by fitting streamline fairings over the buntons, the resistance of the shaft can be halved.

Fairings for use in a working shaft must be strong and resilient so that they are not damaged or deformed by material falling down the shaft. They must not be affected by moisture and must be non-inflammable. They should also be designed so that they can be easily fitted and renewed.

A fairing designed by a ventilating engineer of the N.C.B. to meet these requirements, is illustrated. It is proposed to make it of a plastic such as P.V.C., either unreinforced or having a reinforcement of a material such as glass fibre. The fairing shown is fitted to the bunting joists by springing it on, and is kept in position without the use of clips or bolts.

A RETARDING CREEPER

A creeper which controls tubs or mine cars down gradients on which they would normally run and accelerate has been designed by the divisional planning engineer of the East Midlands Division and his assistant. A specially-designed horn ensures that when the car has been delivered to any required position there is no further contact with the creeper. The special horns, or catches, are attached to the creeper chain in pairs at required intervals and pivotted on the chain joints. Each horn has a small lug protruding on either side which hold it in the engaged position and on which it rests when in the disengaged position.

In the engaged position the horns catch and hold the axle of the car and prevent it over-running the creeper. If the car is to be delivered freely from the creeper end, the horns will disengage as the chain passes round the vertical return wheel, but if cars are already standing on the track, the car being lowered will stop when it reaches the first stationary one, and the horns will drop into the disengaged position when they strike the rear axle of the stationary car. The horns will then remain in the disengaged position until they return round the driving gear at the top of the gradient, where a stationary lug trips them to the engagement position.

This design eliminates manpower now used to control cars on these gradients. There is no noise or damage, a feature found in many designs of retarding creeper, caused by catches striking the axles of stationary cars. Ground excavation on the creeper run is avoided as both the operating and return sections of the creeper chain are accommodated on top of the sleepers.

MACHINERY AND EQUIPMENT

British Earth Moving Equipment

Two mining methods have been combined by Excavators, Inc., of America, to work a 5 ft. seam named the Kittaning Seam. An International Harvester TD-24 with cable bulldozer removes overburden from part of the seam and then coal is pulled from the remainder of the seam by a McCarthy rock borer using a 42 in. auger drill that is powered by a 125 h.p. International UD-18A diesel power unit. Due to old, deep

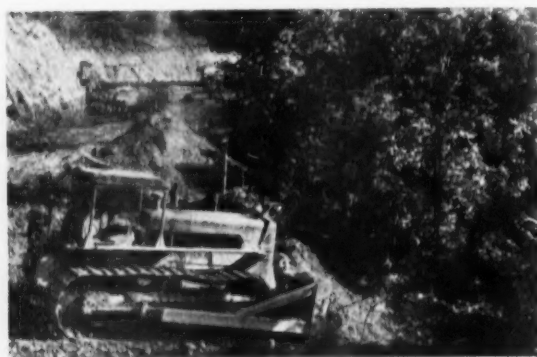


A McCarthy rock borer using 42 in. auger drill powered by 125 h.p. International UD-18A diesel unit at work in the Kittaning Seam, America

mine operations, the company discovered it would be unprofitable to mine the entire seam by stripping methods.

The use of International Harvester equipment in these operations is indicative of the versatility of the equipment, and now it is of interest to note that a new version of the BTD-6 diesel crawler tractor with 25 per cent more power has reached full production at the Doncaster works of International Harvester Co. of Great Britain Ltd. With this news comes the announcement that the company's crawler tractor production, in common with their other products, is now completely British. The New BTD-6 incorporates many of the features of the BTD-6. In the new product the emphasis is on extra power, endurance and reliability rather than on restyling. Although weighing 1,600 lb. more than the earlier model, the New BTD-6 still retains the compactness and maneuverability of the original.

Following the news of the New BTD-6 crawler tractor, the manufacturers have announced their plans for manufacture in Great Britain of the famous Drott Skid Shovel, built exclusively for use with I.H. Crawlers. Drott Skid Shovels are manufactured at present only in America by the Drott Manufacturing Corp. and are available in four sizes, i. 1½; 2 and 3 cu. yd., all of which are imported by Great Britain at the present time. They are designed and supplied for use only on International crawler tractors. The most outstanding characteristic of the Drott is its patented pry-over-shoe action which applies a powerful leverage in digging. In the case of the 6.K-3 model the pry-out force is 9,000 lb. as compared with the lifting capacity of 3,000 lb.



International TD-24 with cable bulldozer removing Kittaning Seam overburden

Large Turbo-Generator for B.E.A.

It has recently been reported that the English Electric Co. Ltd. have received an offer from the British Electricity Authority for what is believed to be the largest turbo-generator of its type in Europe. This turbo-generator is rated at 200,000 kilowatts (260,000 h.p.) which is twice the rating of the largest turbo-generator now in commission in the United Kingdom.

Some impression of the size of the unit may be gathered from the fact that the British Electricity Authority have 288 power stations and the new machine will have a greater individual output than the individual output of 264 of these power stations. In other words, only 24 existing power stations in this country have an individual output greater than the output of this single turbo-generator.

Subject to the consent of the Minister of Fuel and Power being given to the establishment of the power station, the machine will be erected at High Marnham on the River Trent. It will be the first of five turbo-generators of this size and when complete the station will be the largest and most efficient in Great Britain, with a total installed capacity of 1,000,000 kilowatts, or over 1,333,333 h.p.

New Fire Fighting Appliances

Protection against every class of industrial fire risk is stated to be afforded by the comprehensive range of fire safety equipment designed and manufactured by The Pyrene Co., Ltd. Two new fire-fighting appliances produced by these manufacturers are a CO₂ pressure operated dry-chemical extinguisher and a high expansion foam-making branchpipe.

The new Pyrene PDU25 dry-chemical extinguisher has been designed for speedier action in smothering fire outbreaks involving petrol, oils, alcohols, paints, and almost all kinds of industrial solvents. This extinguisher is operated in an upright position. It is especially effective against "running" fires, where the flames are continually being fed by flowing inflammable liquids. The extinguisher contains 25 lb. of Pyrene dry-chemical which is discharged under pressure provided by a cylinder of CO₂ gas.

This is a smooth-flowing dry-chemical which will not cake, even in extremes of temperature, and which will not deteriorate. Additional features are that it is non-abrasive, non-corrosive and non-conductive of electricity. The appliance is brought into action simply by striking a plunger situated in the top-cap. A special squeeze-grip release valve fitted to a short length of flexible high-pressure hose gives perfect control over the discharge of the dry-chemical. This feature enables the operator to conserve the contents of the extinguisher whilst he alters his position to meet the changing conditions of the fire. After use, the extinguisher can be completely recharged on the spot in a few minutes.

The latest addition to the range of Pyrene portable mechanical foam appliances is the new model FB 10X foam-making branchpipe. This appliance gives the relatively high foam output of 1,000 gallons per minute at a water pressure of 60 p.s.i. and a water capacity of 100 g.p.m. using only 5 g.p.m. of the makers' standard foam-making compound. This is a distinct development in fighting fires involving quantities of highly inflammable materials where the largest quantity of stable foam has to be produced from a given quantity of water such as that contained by water tenders or crash tenders. A special feature of this appliance is the dual purpose spray-jet attachment which enables the foam to be discharged in either a powerful jet or a 30 ft. wide spray by a simple movement of a control handle at the nozzle, thereby instantly meeting difficult conditions that may arise from fires of this kind.



The new Pyrene model PDU25

METALS, MINERALS AND ALLOYS

COPPER.—Once again the Office of Defence Mobilization has authorized the diversion to industry of copper scheduled for delivery to Government inventories in the three months beginning April 1. In all, 17,500 tons are involved and releases are to be made in the customary manner; i.e. the Commerce Department is to supervise the release and General Services Administration is to make the sales at market price plus handling and freight charges. Most of the copper released—10,400 tons is metal which was scheduled for delivery to the special defence stockpile during the second quarter.

Mr. Flemming, Office of Defence Mobilization Director, ordered the General Services Administration to defer the stockpile deliveries to March 31, 1956, and cancel second quarter deliveries to the defence stockpile entirely. The remaining 7,100 tons represents copper that was diverted from the stockpile in the last quarter of 1954 and was due for repayment by June 30; repayment has now been postponed to March 31, 1956.

Postponement of repayment is no doubt welcome but clearly this 7,100 tons does not represent a pure gain to consumers. Two thoughts are prompted by this further release. First is that nobody is very happy about using Government metal in this way and both producers and consumers may be more ready to carry stocks in future in consequence of their experience. The second is that though American consumers are continually making estimates of the commercial metal shortage, they invariably appear to struggle along on a release of a third to a quarter of the "minimum requirement".

Meanwhile the news from New York marketwise is that physical supplies of copper and scrap are as tight as ever. Copper is obviously no more plentiful at 36 than at 33 c. per lb.; foreign copper, Connecticut Valley basis, is on offer at 42 c. and one producer is said to have paid this price to keep a fabricating subsidiary going. This fact is being talked of as a pointer to another general price rise. The industry is reported as expressing satisfaction that Chile is dividing exports, 50 per cent to the United States and 50 per cent to Europe.

It is reported from Santiago that a definite settlement has been reached in the wage dispute of Chuquicamata and that this settlement will prove a basis for agreement at other mines. If this is so, it is excellent news. Anaconda, which was said to have offered a rise of 15 per cent against the miners' claim of 100 per cent may congratulate itself on getting away with an increase of only 20 per cent.

It is also reported that the Phelps Dodge Laurel Hill copper refinery closed down on April 5 because of a strike.

The following are the Copper Institutes production and stock figures for the first two months of the year:

	Production			Stocks		
	Feb. 1955	Jan.-Feb. 1955	Jan.-Feb. 1954	Feb. 28 1955	Jan. 31 1955	Feb. 28 1954
U.S.A.	123,162	247,002	215,802	44,579	45,982	118,720
Other countries* ..	89,738	175,481	155,964	144,337	159,296	275,375
World	212,900	422,483	371,766	188,916	205,278	394,095

* Excluding U.S.S.R., Japan, Australia, Norway, Sweden and Yugoslavia.

LEAD.—There has been continued good demand for lead in New York on the basis of 15 c. per ton and no reason why it should not continue. The end of March stock figures are expected to show another appreciable fall. There is growing apprehension however of the possibility of a strike in the automobile industry; not because a strike is more likely now than it was a few weeks back, but simply because the time for negotiation is approaching.

TIN.—Tin has continued a quiet and featureless market in New York. The tinplate mills continue at a high rate of output but there are still substantial stocks of tin mill products to be worked off before any effect on tin demand becomes marked. "Guessers" in the trade have, however, worked out a number of interesting possibilities for the near future. The basis of their guesswork is that tin mill product stocks should be worked well down by the end of June in consequence of the persistent strong demand. If the coming wage negotiations in the steel industry produced a pay increase then there would be further keen demand up till October when a price revision in the steel industry could be made.

Of more immediate concern is the fact that the report on the "Essentiality to the National Defense" of the Texas smelter, already delayed, will not now be ready before April 30. Senator Symington has been appointed chairman of a Senate subcommittee to examine the report.

All this delay is most regrettable not because the Senate is not perfectly right to take time to make a considered judgment but because it is clear that certain producers are holding up ratification of the International Tin Agreement pending a decision on the smelter. Meanwhile, the House Banking and Currency Committee has taken no action on Congressman Multer's bill calling on the House to make its own investigation of the Texas plant. However, the Committee has taken evidence in closed session from Government officials on the smelter. *American Metal Market* reports "on excellent authority" that the tenor of the evidence was that the smelter was no longer necessary.

It is reported from Kuala Lumpur that 12,000 miners at British tin mines in Malaya took part in a one-day strike in protest against the sacking of some workers. 1,300 clerical workers at Singapore harbour have given in strike notices to take effect on April 15; the effect of such a strike would be to make tin exports difficult but not immediately impossible.

The following are the mine output figures for the first two months of the year for some of the leading producing countries. In the case of the Congo the 1954 figure is of course exceptional, while that for 1955 approximates to normal.

Country	Period	1955	1954
Belgian Congo	Jan.-Feb.	2,455	696
Indonesia	Jan.-Feb.	3,943	4,792
Malaya	Jan.-Feb.	9,943	9,385
Nigeria	Jan.-Feb.	1,500*	1,352

* Estimated

In addition complete 1954 figures are now available for Bolivia and Thailand. They are: Bolivian exports 28,799 tons (34,825 in 1953) and Thailand 9,775 tons produced (10,080 in 1953).

ZINC.—A fortnight ago it was suggested in these notes that there was a possibility of a widening of a premium in the United States for special high grade zinc over prime western, the prices of which stood respectively at 13 c. and 11½ c. East St. Louis. However, the feature of the past week's trading has been the persistently good demand for prime western grade. It is true that special high grade is still in the keenest request and the shortest supply, but the talk has recently been of the possibility of a general upward revision of zinc price levels.

It was scarcely a surprise therefore when the St. Joseph Lead Company raised its price for prime western grade from 11½ to 12 c. per lb. although most producers have refused to follow the example. At the moment therefore a split price exists but the feeling is that the price will eventually be established at the new level of 12 c.

Certainly the zinc industry is much cheered by this development since prime western has been the drug on the market and nearly all smelter stocks are of this grade; furthermore, the demand for special high grade would collapse temporarily if the automobile industry were to be struck. At the same time, however, this upturn in demand must tend to weaken the protectionist case the domestic mining industry is putting very vigorously to the Senate at the present time—reference to which is made in Notes and Comments. The zinc producers will certainly not be displeased at a rise in commercial demand for prime western but they may well consider that it would have served their purpose better if the 11½ c. level could have been maintained everywhere while the heat is being turned on Washington.

Meanwhile a leading manufacturer of zinc-base die casting alloy has raised selling prices on alloy types 2 and 5 by a half cent per lb. to 16 c. The advance is attributed partly to the rise in copper and partly to the squeeze in special high grade.

ALUMINIUM.—Following the announcement recorded here last week of the U.S. Bureau of Foreign Commerce decision to limit export licences of aluminium scrap to 9,000 tons during the second quarter, the Department has now amplified this announcement by explaining that the object of the order has been to peg aluminium scrap exports on the basis of the "historical" figure for the year April 1, 1953, to March 31, 1954. Exporters' quotas will be based on shipments made during this base year with a small percentage set aside for those not having exported during this period.

This decision to do no more than peg scrap exports at their current level has been hotly attacked by the smelters who have issued a statement through the Aluminium Smelters' Research

Institute to the effect that this action constitutes no relief to the trade, and insisting that nothing short of a virtual temporary cessation of exports would meet the case! Subsequent reactions appear to have been somewhat more considered and some leading firms in the trade are reported as now foreseeing some improvement in the situation, although it is not thought that such will become apparent before May as any additional supplies of metal which become available in April will go to make up March deficiencies.

Alcan has announced an increase of $\frac{1}{2}$ c. in the domestic Canadian price of primary ingot (99.5 per cent). This brings the Canadian price of 20 $\frac{1}{2}$ c. which is still below the American price. The last Canadian price increase occurred on January 1 of this year.

Exports of Yugoslav bauxite in 1954 exceeded 500,000 tonnes the bulk of this going to West Germany and Italy. On the basis of current contracts, exports for this year look like being some 20 per cent up on 1954.

The pressure on aluminium in the American market is reacting favourably on French producers. Moreover, this year's price increases have made the American market more attractive to the French producer whose exports to the States in 1954 had declined to 1,500 tons compared with 10,300 tons in 1953. The limiting factor on exports is, of course, the growing domestic demand.

CHROME.—Production of Rhodesian chrome in 1954 totalled 442,509 tons compared with 463,030 in 1953.

MAGNESITE.—Austria produced 828,600 tons of crude magnesite last year compared with 804,500 tons in 1953. Corresponding figures for caustic calcined grade was 90,800 (73,200), dead-burnt 254,900 (235,400) and for bricks 166,500 (191,500).

MANGANESE.—An American firm is reported to be negotiating with the Pakistan Government for prospecting rights over the manganese deposits in the Lasbella district of Baluchistan. A geological survey has indicated that deposits in commercial quantities are available near Bela where it is believed that chromite, sulphur, coal and other minerals may also be available.

It is reported that production of manganese ore in Morocco last year totalled about 400,000 tonnes, a decrease of about 7 per cent on 1953. Of this amount about 357,000 tons were of metallurgical grade.

MAGNESIUM.—Dow Chemical has raised its price of primary magnesium by $\frac{1}{2}$ c. to 28 $\frac{1}{2}$ c.

MONAZITE.—According to a statement by the Kenya Mines Department a deposit of rare earth minerals including monazite, estimated at 30,000,000 tons, has been discovered at Mrima Hill close to the Tanganyika border and about 50 miles south of Mombasa. The deposits are reported to extend for about a square mile, and are also stated to contain niobium. In view of the importance of the discovery enquiries have already been received from several leading mining companies and the Kenya Government has decided to award exclusive rights to any suitable company with the requisite capital available.

NICKEL.—It is reported from Athens that the Larymna nickel mine will be ready to begin production next September. It is expected to have an output of 160 tons of nickel-iron ore per day. Krupp's are providing the plant which will enable the ore to be processed locally.

The London Metal Market

(From Our Metal Exchange Correspondent)

This week has seen some clarification in the copper position, as the chances of a strike in Chile have now receded and the U.S. authorities have diverted 17,500 tons of copper to industry which was originally earmarked for the stockpile during the second quarter of this year. Of this figure it is understood that about 7,000 tons is metal which was lent to industry at the end of last year and is due for recall but whose return has now been postponed for another twelve months. How much of the remaining 10,500 tons will have to be repaid at a later date is not certain, but some quarters report that this is an outright sale to industry. This news caused a fairly sharp break in the price in London, but some recovery took place almost immediately from the lowest levels.

With the supply position now clearer the main query is whether or not U.S. exports will be further restricted, and if so whether this will give rise to additional buying on the London market, but with Rhodesian supplies more plentiful the impact should not be so severe as was the case in February.

The backwardation has shown a welcome narrowing, and unless some unforeseen demand springs up it is likely to remain at its present level for some weeks to come.

The zinc market has been more active owing to better demand in the States which has resulted in a rise in the *F. and M.J.* quotation, but it is not expected that there will be any spectacular advance in London as at the moment supply and demand for g.o.b. seem fairly in balance. Some consumers are still having difficulty in obtaining the higher grades.

The lead and tin markets have both been featureless, and on Wednesday morning the Eastern price for the latter was equivalent to £728 $\frac{1}{2}$ per ton c.i.f. Europe.

Closing prices and turnovers for four market days are given in the following table:—

	March 31		April 6	
	Buyers	Sellers	Buyers	Sellers
Copper				
Cash	£363 $\frac{1}{2}$	£364	£351	£352
Three months	£354 $\frac{1}{2}$	£355	£344	£345
Settlement		£364		£352
Week's turnover		5,020 tons		3,675 tons
Tin				
Cash	£716	£717	£717	£717 $\frac{1}{2}$
Three months	£717	£718	£718	£718 $\frac{1}{2}$
Settlement		£717		£717 $\frac{1}{2}$
Week's turnover		510 tons		545 tons
Lead				
Current half month	£103 $\frac{1}{2}$	£104	£104 $\frac{1}{2}$	£105
Three months	£103 $\frac{1}{2}$	£103 $\frac{1}{2}$	£103 $\frac{1}{2}$	£104 $\frac{1}{2}$
Week's turnover		1,475 tons		1,950 tons
Zinc				
Current half month	£88	£88 $\frac{1}{2}$	£89 $\frac{1}{2}$	£89 $\frac{1}{2}$
Three months	£87 $\frac{1}{2}$	£87 $\frac{1}{2}$	£88 $\frac{1}{2}$	£89
Week's turnover		2,400 tons		5,275 tons

OTHER LONDON PRICES — APRIL 6

ANTIMONY

English (99%) delivered,
10 cwt. and over £210 per ton
Crude (70%) £200 per ton
Ore (60% basis) 22s./24s. nom. per unit, c.i.f.

NICKEL

99.5% (home trade) £519 per ton

OTHER METALS

Aluminium, 99.5%, £163 per ton
Bismuth (min. 2 cwt. lots) 16s. lb.
Cadmium (Empire) nominal
Chromium, 6s. 5d./7s. lb.
Cobalt, 21s. lb.
Gold, 250s. 10 $\frac{1}{2}$ d.
Iridium, £30/£32 oz. nom.
Magnesium, 2s. 4d. lb.
Manganese Metal (96%-98%)
£255/£265 according to quantity
Osmiridium, £40 oz. nom.
Osmium, £30 oz. nom.
Palladium, £6 5s./£6 15s. oz.
Platinum, £27/£27 15s.
Rhodium, £41
Ruthenium, £16 oz.
Quicksilver, £108 10s./£109 ex-warehouse
Selenium, 43s. nom.
per lb.
Silver, 75 $\frac{1}{2}$ d. f.oz. spot and 75 $\frac{1}{2}$ d. f'd
Tellurium, 15s./16s. lb.

ORES, ALLOYS, ETC.

Bismuth 50% 7s. 3d. lb. c.i.f.
40% 6s. 3d. lb. c.i.f.
Chrome Ore—
Rhodesian Metallurgical (semi-friable) 48% .. £13 per ton c.i.f.
" Refractory 45% .. £13 per ton c.i.f.
" Smalls 42% .. £10 2s. 6d. per ton c.i.f.
Magnesite, ground calcined .. £26-£27 d/d
Magnesite, Raw .. £10-£11 d/d
Molybdenite (85% basis) .. 105s. 3d.-108s. 1d. per unit c.i.f.
Wolfram and Scheelite (65%) .. 211s./216s. c.i.f.
Tungsten Metal Powder (98% Min. W.) .. 18s. 2d. nom. per lb. (home)
Ferro-tungsten (80%/85%) .. 15s. 2d. nom. per lb. (home)
Carbide, 4-cwt. lots .. £37 6s. 3d. d/d per ton
Ferro-manganese, home .. £53 17s. 6d. per ton
Manganese Ore Indian c.i.f.
Europe (46%-48%) .. 76d./78d. per unit
Manganese Ore (38%/40) .. 64d./66d. per unit
Brass Wire .. 3s. 3d. per lb. basis
Brass Tubes, solid drawn .. 2s. 7 $\frac{1}{2}$ d. per lb. basis

Owing to the Easter Holiday period *The Mining Journal* has been published a day earlier this week. Prices referred to are therefore up to and including April 6.

(By Our Stock Exchange Correspondent)

A feature of the Orange Free State market was the continued fall in Free State Geduld. Market circles were disappointed with recent developments from this company and although it is felt that a proportion of this property will prove rich, other areas may prove marginal, including, possibly, the new acquisition from Freddie's Consolidated. Harmony inspired confidence; this mine has produced steady results and the shares went ahead accordingly. A further slight fall in Loraine took place due to lack of news concerning this company's outlook and natural uneasiness following the recent changes by Freddie's Consolidated. Welkom also suffered from this trend; it is felt

Canadians were affected by the continued high level in United States business activity, interest being mainly centred on base metal issues. The commencement of work on the St. Lawrence Seaway, together with the approach of spring, may well have stimulated interest in this section.

FINANCE	Price	+ or -	RAND GOLD contd.	Price	+ or -	DIAMONDS & PLATINUM	Price	+ or -	TIN (Nigerian and	Price	+ or -
April 5	7 d	on week	April 5	7 d	on week	April 5	7 d	on week	Miscellaneous)	April 5	7 d
African & European ...	7 1/2	—	1. Rand Consolidated.	43/9	—	Anglo American Inv. ...	23/3	—	Miscellaneous contd.	2/7 1/2	—
Anglo American Corp.	7 1/2	—	Western Refcs	44/4 1/2	+1 10/16	Casis	23/3	—	Kad & Hase Metall.	2/7 1/2	—
Anglo-French	20/7 1/4	-7 1/4				Cons. Diam. of S.W.A.	7	—	Jantar Nigeria	8 1/4	+1 1/4
Anglo Transvaal Consol.	28/9	—	O.F.S. GOLD			De Beers Delf. Bearer.	5 1/2	+ 1/8	Joe Tin Area	13/9	—
Central Mining (E.I. shrs.)	41/3	+1/3	Freddies	4/3	—	De Beers Pfd. Bearer	16 1/4	—	Kaduna Prospectors	2/6	—
Consolidated Goldfields	58/13	+1/3	Freddies Consolidated	7/-	—	Pots Platinum	8/3	—	Kaduna Syndicate	2/6	—
Consol. Mines Selection	38 9/16	—	F.S. Geduld	4 1/4	- 1/8	Waterval	14/4 1/2	—	London Tin	7/6	—
East Rand Consols.	2/6	-3d	Geoffries	17/3	-3d				United Tin	2/10 1/4	-1 1/4
General Mining	9 7/8	+ 1/8	Harmony	35/6	+1/3	COPPER					
H.E. Prop.	39/6	+3d	Loraine	10/6	-3d	Bancroft	44/3	+3d	SILVER, LEAD, ZINC		
Johannes	39/6	+3d	Lydemburg Estates	20/7 1/4	-7 1/4	Chartered	119/-	+3/4	Broken Hill South	50/-	—
Rand Mines	3 1/2	—	Morrispruit	12/3	—	Esperanza	4/7 1/4	-4 1/4	Burma Corporation	2/7 1/2	—
Rand Selection.	43/11 1/4	+1 10/16	Middle Wits	17/3	—	Messina	7 1/2	+ 1/8	Consol. Zinc	42/9	—
Union Corporation	43/6	+3/6	Ofsets	3 1/2	+ 1/8	Nchanga	13 1/2	+ 1/8	Kad. George	12/7 1/2	-1 1/2
Vereeniging Estates	4 1/2	—	President Brand	70/7 1/2	—	Rhod. Anglo-American	100/-	+2 1/2	Mount Isa	50/9	-3d
Wits	41 10/16	+1/3	President Steyn	28/3	-9d	Rhod. Kanga	34/9	+1 1/4	North Broken Hill	34/6	-3d
West Wits	38/6	-3d	S. Helena	41/9	-3d	Rhodesian Selection	19/3	+1 1/4	Rhodesian Broken Hill	12/3	+ 6d
			Virginia Ord.	14/6	-9d	Rhokana	38 1/4	+ 1/4	San Francisco Mines	23/6	-3d
			Welkom	21/9	-1/6	Rio Tinto	50	—	Uruwira	5/4 1/2	-3d
			Western Holdings	4 1/2	+ 1/8	Roan Antelope	27/13	+1 1/4			
						Selection Trust	73/-	+2/-			
						Tanks	7 1/2	+ 1/8	MISCELLANEOUS		
						Tharsis Sulphur Br.	6 1/4	—	BASE METALS & COAL		
RAND GOLD									Amal. Collieries of S.A.	48/6	-2/9
Blyvoors	30/-	+1/9	WEST AFRICAN GOLD						Associated Manganese	38/9	—
Brakpan	6/9	—	Amalgamated Banket	2/4 1/2	—	TIN (Eastern)			Cape Asbestos	10/9	+3d
Buffelsfontein	34/6	+1/3	Ariston	6 1/4	—	Ayer Hitam	27/6	—	C.P. Manganese	40/-	—
City Deep	12/6	-6d	Ashanti	22/-	-3d	Gopeng	7/4	+1 1/2	Consol. Murchison	61/3	-7 1/2
Consol. Main Reef	20/-	-7 1/4	Bibiani	4/10 1/4	-1 1/4	Hongkong	8/11	+1 1/2	Natal Navigation	2 1/2	—
Crown	45/7 1/2	—	Bremang	1/6	—	Ipo	21/10 1/4	+1 1/2	Turner & Newall	103/9	+3/-
Daggas	36/3	-9d	G.C. Main Reef	3/4 1/2	—	Kamunting	6/10 1/4	-1 1/2	Witbank Colliery	4 1/2	+3d
Dominion Reefs	32/6	—	Konongo	2/3	—	Kepong Dredging	3/3	—			
Dourfontein	30/-	-1/3	Lynchburg Deep	1/-	-3d	Kinta Tin Mines	11/6	+3d	CANADIAN MINES		
Durban Deep	32/6	—	Marlu	1/-	-3d	Malayan Dredging	8/11	-1 1/2	Dome	530/xd	-1 1/2
E. Champs	9/-	-3d	Taguach	1/-	-3d	Pahang	11/6	—	Hollinger	532	—
E. Daggas	10/6	-3d	Western Selection	8/7 1/2	+1 1/4	Pengkalan	10/9/xd	+1 1/2	Hudson Bay Mining	510/9	+ 1/4
E. Geduld (46. units)	28/6	+9d				Petaling	8/10/xd	-1 1/2	International Nickel	511/7	+ 1/4
E. Geduld Pros.	3 1/2	+ 1/8	AUSTRALIAN GOLD			Rambutan	17/6	—	Mining Corp. of Canada	16 1/4	—
Geduld	10/6	—	Great Mines of Kalgortie	12/-xd	—	Siamese Tin	5/7 1/2	—	Noranda	5162 1/2	+ 1 1/4
Gert.	10/6	—	Gold Boulder Prop.	9/11xd	-1 1/2	S. Malayan	7/3	-3d	Quemont	187 1/2	+ 1 1/4
Grootvlei	20/9	-6d	Lake View & Star	15/6	-3d	S. Tronoh	10/3	-1 1/2	Yukon	4/3	+1 1/2
Hartebeestfontein	32/6	+2/9	Mount Morgan	19/3	-3d	Sungei Kinta	7/3	+1/3	OIL		
Libanon	8/3	—	North H. Kalgortie	7/3	-3d	Tekka Taiping	7/3	+1/3	British Petroleum	75/-	+1/9
Luipaards Vlei	23/9	-6d	Sons of G. S. S.	5/3	-3d	Tronoh	7/4	-4 1/2	Apex	27/9	—
Marievale	21/6	+1/3	Western Mining	10/-	-3d				Attcock	45/7 1/2	+1/3
New Kleinfontein	8/6	-3d							Burmah	5 1/2	+ 1/8
New Pioneer	15/9	+1/-							Canadian Eagle	1 1/2	+1/3
Randfontein	64/6	-3d							Monican Eagle	20/9	—
Robinson Deep	16/3	-3d	MISCELLANEOUS GOLD						Shell	6 1/2	—
Rose Deep	13/3	-3d	Cam & Motor	8/3	-1 1/2				Trinidad Leasehold	30/7 1/2	+4 1/2
Simmer & Jack	4/14	—	Champion Reef	4/-	—				T.P.D.	25/3	+6d
S.A. Lands	21/10 1/4	—	Falcon Mines	7/-xd	-3d				Ultramar	29/3	—
Springs	2/7 1/2	-3d	Globe & Phoenix	26/-	—						
Stilfontein	26/7 1/2	+1 1/4	G.F. Rhodesian	6/3	-3d						
Sub Nigel	36/10 1/4	—	Motapa	1/6	—	TIN (Nigerian and					
Vaal Reefs	31/6	-1/6	Myosore	6/-	—	Miscellaneous)	13/7 1/2	—			
Van Dyk	42/-	-6d	Nyandorog	6/6	—	Amalgamated Tin	28/9	—			
Ventersburg	17/3	-3d	Oreorgum	4/4 1/2	—	Beralt Tin	18 10/16	-1 1/2			
Vlakfontein	35/3	+9d	S. John d'El Rey	12/6	—	British Tin Inv.	18 7/16	-1 1/2			
Vogelstruibaalt	5 1/2	-6	Zarns	50/9	-3/-	Ex-Lands Nigeria	2/7 1/2	—			
West Driefontein	5 1/2	-6				Geevor Tin	12/7 1/2	+1 1/2			

COMPANY NEWS AND VIEWS

Anglo American Reports Show Encouraging Results

The annual report of Western Reefs, published this week along with the other established gold producers in the Anglo American Corporation of South Africa group (see page 393), focused attention on the prospecting carried out on the farm Goedenog No. 62 where a total of 7,133 ft. driven showed a payability of 62 per cent, the values rising from 481 in. dwt. to 520 in. dwt. This area, over which the company has applied for a mining lease, is outside the company's present mining area, but if a sufficient quantity of payable ore is developed application will be made for further ground to be incorporated in the company's lease area.

Vaal Reefs, the deep level mining proposition on the Far West Rand, made good progress in 1954 towards the start of production sometime next year. The chairman, in his statement, recalled that a year ago he estimated that it would require a capital expenditure of about £8,000,000 to bring the mine into production by 1956. The question of how the amount outstanding of approximately £4,400,000 can be found this year and next is under consideration by the Board.

Ashanti: Progress of Eaton-Turner Shaft

The Eaton-Turner shaft of Ashanti Goldfields Corporation was sunk a further 1,533 ft. during the year ended September 30, 1954. At the year end this shaft, on which exploration of the lower levels of the mine depends, had reached the total depth of 3,153 ft. This left only 1,047 ft. to be accomplished before the final depth of 4,200 ft. was reached.

During the past financial year an advance was made in the tonnage crushed at the mine in addition to which the yield of gold improved to 192,494 oz. from 180,218 oz., but working costs showed an increase.

Year to Sep. 30	Treated (s. tons)	Grade (dwt.)	Working* Costs s. d.	Devel- opment (feet)	Ore Reserves Tons (000)	Grade (dwt.)
1954	297,690	14.36	71 6	29,745	2,212.9	16.2
1953	281,021	14.37	69 5	26,211	1,408.4	19.0

* Excluding development costs of 14s. 4d. (1953 - 12s. 6d.). † Including shafts

Profits after taxation rose from £335,096 to £339,236 and dividends on the issued ordinary capital of £1,248,557 were maintained at 40 per cent. (See M.J., March 4.) Profits earned during the first six months of the current financial year have risen to £419,672 from £376,000 in the previous corresponding period.

Meeting, London, April 27. Major General Sir Edward L. Spears is chairman.

Bibiani's Promising Outlook

Two factors of particular importance emerge from a study of operations carried out during the year ended September 30, 1954, by Bibiani (1927). Firstly, a determined and successful effort was made to meet the continued trend of rising costs, while secondly, the recovery of gold was slightly improved at 92 per cent from the previous figure of 91.3 per cent. In view of the complex nature of Bibiani ore this level of recovery is considered good.

Year to Sep. 30	Treated (s. tons)	Grade (dwt.)	Costs s. d.	Devel- opment (feet)	Ore Reserves Tons (000)	Grade (dwt.)
1954	350,582	4.82	41 8	10,314	1,783.5	5.47
1953	362,580	4.53	40 9	11,510	1,782.7	5.52

During the first five months of the current financial year there have been sustained decreases in costs at the mine. The outcome of this improvement has been impressive, and although the tonnage milled, together with the amount of gold recovered, have remained largely unchanged, results up to the end of February show that profits have been more than doubled at £72,700 compared with £33,100 in the previous corresponding period.

As indicated in a preliminary profit statement (see M.J., March 4, page 244) net profits earned at £67,018 remained virtually unchanged from the preceding year's figure of £67,365. Dividends on the issued ordinary capital of £500,000 were maintained at 10 per cent.

Major General Sir Edward L. Spears is chairman. Meeting, London, April 27.

Rand and O.F.S. Gold Returns for March

Amongst the monthly gold returns from producing mines of the Rand and O.F.S. for March—based on a gold price of 250s. 5d. compared with 251s. 3d. for the previous month—the results reported by President Brand were again impressive. The mill throughput rose by 2,000 tons and the grade advanced from 13.8 dwt. to nearly 14.4 dwt. per ton crushed. Accordingly, working profits advanced by nearly £22,000 to almost £216,000. This was an outstanding achievement in view of the fact that only eight months have been completed since production commenced in August last year. At St. Helena a rise in tonnage was also reported, and although there was only a fractional rise in the grade of ore milled, working profits earned continued their upward course with a gain of over £12,000 from those of the previous month.

Welkom was again disappointing. An increase of 5,000 tons in mill throughput was reported but a rise in costs, together with a slight drop in the milling grade from 4.2 dwt. per ton to 4 dwt., brought profits down from about £7,400 to

RAND AND O.F.S. GOLD RETURNS FOR MARCH

Company	March 1955			Yr. ends	Current Financial Year			Yr. ends	Last Financial Year		
	Tons (000)	Yield (oz.)	Profit (£000)		Tons (000)	Yield (oz.)	Profit (£000)		Tons (000)	Yield (oz.)	Profit (£000)
Gold Fields											
Doornfontein	50	19,241	87 9	J	448	155,386	759 4	J	229	66,929	224 5
Libanon	102	21,399	56 3	J	881	185,027	474 7	J	792	161,891	416 9
Luipaards Vlei	100	19,825	638 2	J	937	87,757	376 2	J	956	177,782	368 4
Rietfontein	27	6,023	20 2	D	79	17,901	61 0	J	81	18,285	71 0
Robinson	75	16,463	18 6	D	260	55,135	77 2	J	281	78,691	63 8
Simmer & Jack	117	20,009	18 2	D	352	59,311	43 8	J	379	60,717	39 4
Sub Nigel	66	21,779	90 6	J	595	195,600	837 7	J	596	197,530	901 2
Venterspost	110	27,060	66 8	J	951	234,768	569 2	J	955	223,693	516 3
Vlakfontein	39	14,275	74 5	D	116	38,533	220 8	J	113	40,424	214 8
Vogels	103	26,641	113 1	J	308	79,560	336 6	J	304	76,455	320 2
West Drie	67	51,002	408 9	J	505	383,795	2987 6	J	405	296,612	2393 1
Anglo American											
Brakpan	109	18,338	15 2	D	318	53,908	42 4	J	329	57,493	55 8
Daggas	227	51,867	320 8	D	663	151,625	935 0	J	636	148,595	909 1
East Daggas	96	16,129	48 7	D	282	47,276	142 1	J	278	47,279	139 5
President Brand	40	28,654	215 7	D	116	80,290	595 0	J	—	—	—
President Steyn	67	21,917	88 6	D	191	62,445	265 5	J	—	—	—
S.A. Lands	96	18,066	57 5	D	285	53,468	169 9	J	293	53,873	155 1
Springs	119	15,812	8 2	D	351	47,517	23 5	J	387	54,413	24 1
Welkom	78	15,950	4 4	D	226	47,205	24 1	J	186	37,452	L 6 3
Western Hlgs.	62	23,100	127 5	D	178	68,817	278 1	J	137	44,103	L 30 1
West. Reef Ex.	120	22,342	57 7	D	353	65,818	166 2	J	332	66,077	194 7
Central Mining											
Blyvoor	109	62,895	488 6	J	926	134,785	4104 5	J	880	158,487	4190 8
City Deep	162	31,687	4 2	D	479	91,185	18 8	J	483	92,702	56 3
Cons. M.R.	180	26,504	25 1	J	1,559	226,002	242 3	J	1,486	210,400	183 4
Crown	308	49,766	50 0	D	866	950,379	145 5	J	793	128,237	141 6
D. Roodepoort	186	31,594	52 2	D	524	88,455	142 3	J	515	85,109	141 7
East Rand Prop.	223	52,869	165 2	D	629	148,044	450 5	J	560	128,126	337 9
Harmony	47	16,931	60 1	J	301	107,801	336 9	J	—	—	—
Moder East	132	14,781	17 5	J	1,041	124,893	137 6	J	1,017	116,581	121 6
Rose Deep	63	9,745	10 2	D	182	28,689	26 5	J	200	30,976	35 5
Weigedacht	34	4,080	5 1	J	300	34,985	12 3	J	302	36,999	23 1
J.C.I.*											
E. Champ. d'Or.	21	1,663	76 1	D	59	4,549	117 4	J	70	6,909	L 145 8
Freddies Cons.	88	13,596	L 44 7	D	267	49,462	L 135 3	J	87	16,489	L 48 3
Govt. G.M.A.	274	34,953	839 0	D	772	101,207	117 2	J	765	98,045	90 1
Randfontein	251	29,263	93 1	D	770	88,096	265 4	J	835	119,411	130 7
Union											
East Geduld	154	47,361	358 4	D	436	134,085	1011 7	J	389	119,583	870 6
Geduld Prop.	105	17,334	48 2	D	295	49,483	136 4	J	266	43,331	73 1
Grootvlei	195	42,214	242 3	D	555	119,880	676 4	J	522	111,329	618 0
Marievale	74	19,133	92 3	D	222	54,555	261 4	J	188	47,654	202 7
St. Helena	106	26,505	119 1	D	308	65,689	329 6	J	230	50,382	148 9
Van Dyk	84	13,731	1 3	D	239	39,597	4 5	J	234	40,724	7 8
General Mining											
Ellaton Gold M.	30	9,083	45 7	D	89	27,602	144 3	J	71	17,471	49 3
S. Roodepoort	28	6,122	21 0	J	247	53,417	182 0	J	247	53,697	182 4
Stillfontein	85	33,366	208 4	D	249	97,942	620 9	J	226	71,354	378 4
W. Rand Cons.	237	28,287	1225 6	D	692	80,844	1650 8	J	647	85,014	513 4
Anglo-Transvaal											
N. Klerksdorp	11	1,508	L 9 0	D	33	4,237	L 4 1	J	33	—	L 3 7
Rand Leases	191	31,037	46 9	J	1,658	276,062	415 1	J	1,441	247,660	157 3
Village M.R.	34	5,184	9 7	J	309	46,466	90 6	J	307	—	105 7
Virginia	50	10,530	14 9	J	304	58,483	61 3	J	—	—	—
Others											
N. Kleinfontein	108	13,273	7 0	D	312	37,828	14 0	J	315	39,682	52 1
Nigel Gold	24	3,870	2 2	D	70	10,913	6 5	J	84	12,996	L 5 6

Notes—Profit figures are in all cases of working profit, excluding profit from sale of gold at premium prices. In cases of groups marked with an asterisk (*) profit includes sundry revenue. Profit figures preceded by L indicates loss.

* Gold and pyrite

† Gold and uranium

‡ Represents profit from uranium-gold operations

a Excluding 29,500 tons from Bird Reef which yielded 1,361 oz. gold

b Excluding £18,772 from uranium-gold

c Excluding Bird Reef operations and profits

about £4,400. At President Steyn, however, the rise in profits continued. The mill grade remained unchanged from that of the previous month at 6½ dwt. per ton and the higher profits, some £5,000, must be attributed to the larger tonnage throughput. At Western Holdings 4,000 tons went through the mill, but due to a decline in the grade milled, from 7½ dwt. to 7½ dwt. per ton, profits advanced by only £2,000 over those achieved in February.

Results from several of the younger mines on the Far West Rand were also encouraging.

Anglo American Corporation Offers Travelling Fellowships

The Anglo American Corporation of South Africa have announced that they will offer a limited number of Travelling Fellowships to representatives of the United Kingdom universities.

The object of the Fellowships is to provide opportunity for suitably qualified representatives of United Kingdom universities, or other institutions offering technical training, to visit either the Union of South Africa or Northern Rhodesia in order that they may study technical operations at properties of the Anglo American Group and also the conditions under which technical graduates are employed.

Successful applicants for the Union Fellowship will be paid a cash grant of £300—those awarded the Northern Rhodesian Fellowship will receive £275 in cash.

Visits of approximately two months' duration are contemplated. Cognisance will be taken of the particular interests of individuals when programmes of visits are arranged.

Travelling and accommodation arrangements must be made by individuals. In areas where there are no hotels, however, accommodation will be provided in single men's residence, at the ruling charges.

Persons interested should make application to: The Appointments Officer, The Anglo American Corporation of South Africa Ltd., 11 Old Jewry, London, E.C.2, who will be pleased to answer any enquiries.

AMALGAMATED BANKET AREAS

The nineteenth annual general meeting of Amalgamated Banket Areas, Ltd., was held on Tuesday last at the Chartered Insurance Institute, 20 Aldermanbury, London, E.C.

Major-General W. W. Richards, C.B., C.B.E., M.C., chairman, presided, and the following is an extract from his Statement circulated with the Report and Accounts for the year ended September 30, 1954:—

It was not until the closing weeks of the year under review that the full benefits of the amalgamation of the Fanti and Tamsoo Mines were reflected in our overall production and profit figures. We then in September, 1954, witnessed an advance of nearly 6,000 tons to 78,092 tons in the monthly throughput of ore and an increase of £24,251 to £49,728 in the monthly Mine profit.

Although these very much improved figures continued for the following six months to date, they were only enjoyed, as I have said, for one month of the year under review. For that reason, we are recommending a dividend of 2½ per cent. for the year ended September 30, 1954, as compared with 5 per cent. for the previous year but, at the same time, we are proposing to pay, from the profits already earned in respect of the current year ending September 30, 1955, an interim dividend of 5 per cent. The Dividend Warrant, aggregating 7½ per cent., less tax, will be posted to Members on April 5, 1955. The payment will absorb the sum of £119,000.

ORE RESERVES

The total ore reserves, as at September 30, 1954, were computed at 3,332,541 tons. Of this tonnage, 1,816,905 tons averaging 5.564 dwt. over a width of 40.70 in., represented the underground ore; and 1,515,636 tons averaging 1.845 dwt. over a width of 123.01 in. the surface deposit of the Pepe open-cast section.

A satisfactory feature of the year's work has been the continued increase in efficiencies in each Department of the Mine. It is estimated by the Consulting Engineers that the resultant gain in productivity is comparable to an addition to the labour strength of approximately 2,000 head. For this excellent state of affairs, our thanks are due in large measure to the activities of the Industrial Consultants, H. H. Fraser and Associates of Johannesburg, whose Engineers have now commenced their fourth and last year of employment by our Company.

The report and accounts were adopted.

Going to Australia or New Zealand?



Business men and others will find all practical information in the Australia and New Zealand Bank's free travellers' guides to Capital Cities. Each contains city and suburban maps together with lists of hotels, theatres, public buildings and other points of interest to visitors. These pocket guides cover Sydney, Melbourne, Perth, Adelaide, Brisbane, Wellington, Auckland and Christchurch. Copies of any of these guides will be gladly sent on application to the Overseas Department.

AUSTRALIA AND NEW ZEALAND BANK LIMITED

Head Office: 71 CORNHILL, LONDON, E.C.3.

UNITED TIN AREAS OF NIGERIA, LTD.

The annual general meeting of United Tin Areas of Nigeria, Ltd., was held on March 31, 1955, at Winchester House, E.C.2.

Mr. A. Hedley Williams, M.Inst.Pet., A.M.I.M.M., Chairman of the Company, presided.

The following is the Statement of the Chairman circulated with the Report and accounts:—

I am glad to be able to tell you that although we show a loss for the year ended June 30, 1954, there is considerable improvement since, because of the appreciable profits accruing from working the newly acquired Tin/Columbite Areas.

The Accounts for the year ended June 30, 1954, now before you, show that on sales of 93 tons tin concentrates, and 1,325 tons columbite concentrates, as compared with 130 tons and 16,495 tons respectively for the previous year, a loss was sustained of £15,710. This result, as envisaged at our last meeting, was due to our main leases at Gurum becoming uneconomical to work due to increased labour and other working costs, coupled with the lower average tin metal price received. Additionally, the substantial decrease in columbite production followed the sale of leases last year to the Gold and Base Metal Mines of Nigeria Ltd.

The Balance Sheet shows current assets at £89,950, being mainly sums due from sales and cash, against current liabilities of £14,145. As regards investments, unquoted securities at £11,553 represents the book value of our shareholding in Mines Development Syndicate (West Africa) Ltd. The decrease of £16,065 in the item of unquoted securities arises from the sale of shares received in part payment, reported last year, of certain outlying leases at Liruein Kano, to assist us in the purchase of essential plant and machinery for the new Odegi areas. Quoted Securities, £39,986, represent mainly the cost of our shareholding in The Esperanza Copper and Sulphur Co. Ltd., in which we still retain a substantial interest. A portion of our holding was sold during the year to assist towards the acquisition of headquarters buildings, milling plant and further tin and columbite areas in Nigeria. The increase shown in the value of mining leases, etc., and plant and machinery arises from these acquisitions.

NEW AREAS

Since the close of last year ended June 30, 1954, the Company has acquired further additional areas situated at Odegi, Benue Province, Northern Nigeria, first, by the purchase of the share capital of Fobra Tin Ltd., its assets having been acquired by us, and secondly, by the purchase of adjoining areas, which together form a large but compact and easily managed block. Members were advised of these purchases by circular in August and November last. The Ribon Valley (Nigeria) Tinfields Ltd. hold a one-third interest in this new business, which is proving a most valuable acquisition.

In addition to deliveries being made under a contract for 34 tons columbite, valid until the end of 1956, further contracts have been entered into for some 130 tons up to the end of 1955. Ribon Valley (Nigeria) Tinfields Ltd. have a one-third interest.

The Company's own total output for the seven months ended January 31, 1955, was 91 tons tin concentrates and 25 tons columbite concentrates. The profit from both sources to the end of December, 1954, of the current financial year, the latest month for which we have figures, is estimated at £20,000, subject to depreciation.

I must conclude by expressing appreciation of the excellent service given by our staff in Nigeria.

The Chairman addressing the meeting said:

I would add that the acquisition of the New Areas after the close of the year ended June 30, 1954, has been obviously justified. An interim dividend has been declared for the current year of 7½% less tax.

Members will appreciate the considerable expenditure in the exploration and purchase of the new areas. It has been decided to make a small issue of capital to provide for intensive development of the new areas and the additional equipment required to speed up and increase production.

For this purpose, it will be necessary to increase the Authorized Capital of the Company. An Extraordinary General Meeting is being convened forthwith to obtain Members' consent to increase the Authorized Capital from its present figure of £150,000 to £200,000 preparatory to a "Rights" issue to Stockholders.

The report and accounts were adopted.

CENTRAL MINING—RAND MINES GROUP

NOTICE IS HEREBY GIVEN THAT THE ORDINARY GENERAL MEETINGS OF THE UNDERMENTIONED COMPANIES WILL BE HELD IN THE BOARD ROOM, SECOND FLOOR, THE CORNER HOUSE, COMMISSIONER STREET, JOHANNESBURG, AS FOLLOWS:—

Name of Company (each Incorporated in the Union of South Africa)	Date of Meeting	Time	Transfer Books and Registers of Members will be closed from (both days inclusive) 1955
Modderfontein B. Gold Mines Limited	Monday 9th May	11 a.m.	3rd to 9th May
Durban Roodepoort Deep Limited	do.	Noon	do.
Rose Deep Limited	do.	2.30 p.m.	do.
Geldenhuis Deep Limited	do.	3.30 p.m.	do.
Crown Mines Limited	Tuesday 10th May	11 a.m.	4th to 10th May
East Rand Proprietary Mines Limited	do.	Noon	do.
City Deep Limited	do.	2.30 p.m.	do.
Transvaal Consolidated Land and Exploration Company Limited	do.	3.30 p.m.	do.
Rand Mines Limited	Friday 13th May	11 a.m.	7th to 13th May

ABRIDGED NOTICES OF "SPECIAL BUSINESS" TO BE CONSIDERED AT THE ORDINARY GENERAL MEETINGS OF MODDERFONTEIN B. GOLD MINES LIMITED AND ROSE DEEP LIMITED REDUCTION OF CAPITAL

MODDERFONTEIN B. GOLD MINES LIMITED

NOTICE IS ALSO HEREBY GIVEN that at the Ordinary General Meeting of MODDERFONTEIN B. GOLD MINES LIMITED shareholders will be asked to consider a resolution as a Special Resolution, in terms of the Companies Act (1926), as amended, of the Union of South Africa, to allow for the reduction of the authorized capital of the Company from £280,000 to £210,000 by returning to shareholders paid-up capital which is in excess of the wants of the Company to the extent of 6d. per share, thus reducing the nominal value of the shares from 2s. to 1s. 6d. each.

ROSE DEEP LIMITED

AND NOTICE IS ALSO HEREBY GIVEN that at the Ordinary General Meeting of ROSE DEEP LIMITED shareholders will be asked to consider a resolution as a Special Resolution, in terms of the Companies Act (1926), as amended, of the Union of South Africa, to allow for the reduction of the authorized capital of the Company from £595,000 to £490,000 by returning to shareholders paid-up capital which is in excess of the wants of the Company to the extent of 3s. per share, thus reducing the nominal value of the shares from 17s. to 14s. each.

The Directors of the two above-mentioned Companies, in continuance of the policy of making annual repayments of capital in preference to the declaration of dividends, recommend a further capital repayment which is considered to be the more appropriate form of distribution at this late stage in the life of the mines concerned.

GENERAL NOTE

A member entitled to attend and vote at a meeting may appoint one or more proxies to attend and vote and speak in his stead. A proxy need not be a member of the Company.

In the case of Rand Mines Limited a proxy may vote only on a poll.

Those holders of share warrants who wish and have the right to be represented at these meetings, can obtain the necessary information regarding the formalities to be complied with and forms of proxy on application.

BY ORDER OF THE BOARDS,
A. MOIR & CO.
London Secretaries.

Office of the London Secretaries:
4 London Wall Buildings, E.C.2.
April 7, 1955.

ANGLO AMERICAN CORPORATION OF SOUTH AFRICA, LIMITED

(Incorporated in the Union of South Africa)

MINING COMPANIES' REPORTS (abridged) for the year ended 31st December, 1954

(All Companies mentioned are incorporated in the Union of South Africa)

BRAKPAN MINES LIMITED

CAPITAL: Authorised and Issued—£1,150,000 in 4,600,000 Shares of 5s. each, fully paid.

Income and Expenditure Account		Appropriation Account	
	£		£
Tons milled	1,321,000	Yield (per ton, 3.38 dwt.)	223,187 oz.
Revenue (per ton milled 42/1.9)	2,784,646	Taxation:	
Working Costs (per ton milled 39/6.3)	2,610,843	Union Government Income Tax	2,047
		Provincial Tax	410
			2,457
Working Profit (per ton milled 2/7.6)	173,803	Less Adjustment in respect of previous years	476
Sundry Revenue less Expenditure	57,715		1,981
Total Profit	231,518		
Add—		Government's Share of Profit under Mining Lease	14,446
Balance to credit of Appropriation Account at December 31, 1953	338,869	Dividends No. 83 of 4/4d. per share and No. 84 of 6d. per share	201,250
Silicosis Outstanding Liabilities Trust Fund—refund	15,685	Directors' Special Remuneration	7,500
Funds previously Appropriated for Capital Expenditure now written back	2,890	Balance unappropriated at December 31, 1954	363,785
	£588,962		£588,962

ORE RESERVE (based on pay limit of 3.6 dwt.) (1953—3.6 dwt.):			
Tons	Stope Width (inches)	Stope Value (dwt.)	Inch-dwt.
1953	3,547,600	44.76	209
1954	3,257,100	45.73	218

The value of the ore mined from the Reserve in 1954 was 4.63 dwt.

DEVELOPMENT:—			
Advanced	Sampled	Percentage payable	Average reef width (inches)
54,200	42,130	26.3	50.48

The Reserve includes ore developed on the Footwall Reef, which totalled 245,700 tons, averaging 5.18 dwt. over a stope width of 73.25 inches.

CAPITAL EXPENDITURE.—There was no capital expenditure during the year under review. For the current year it is estimated that expenditure on Capital Account will be £5,000.

SHAREHOLDINGS.—The Company's shareholding in The South African Land & Exploration Company Limited remains unchanged at 361,067 shares.

SPRINGS MINES LIMITED

CAPITAL: Authorised and Issued—£2,527,500 in 10,110,000 Shares of 5s. each, fully paid.

Income and Expenditure Account		Appropriation Account	
	£		£
Tons milled	1,522,000	Yield (per ton, 2.79 dwt.)	212,574 oz.
Revenue (per ton milled 34/9.8)	2,649,489	Taxation:	
Working Costs (per ton milled 33/7.2)	2,556,917	Union Government Income Tax	1,861
		Provincial Tax	372
Working Profit (per ton milled 1/2.6)	92,572	Government's share of Profits under Mining Lease	5,779
Sundry Revenue, less Expenditure	8,466	Appropriation for Capital Expenditure	2,485
Total Profit	101,038	Capital Issue Expenses	1
Add—		Dividend No. 65 of 2½d. per share	94,781
Balance to credit of Appropriation Account at December 31, 1953	435,632	Directors' Special Remuneration	2,528
Outstanding Liabilities Trust Fund Refund	15,509	Balance unappropriated at December 31, 1954	444,372
	£552,179		£552,179

ORE RESERVE (based on pay limit of 3.2 dwt.) (1953—3.1 dwt.):			
Tons	Stope Width (inches)	Stope Value (dwt.)	Inch-dwt.
1953	2,764,100	43.51	201
1954	2,544,700	44.34	208

DEVELOPMENT:—			
Advanced	Sampled	Percentage payable	Average reef width (inches)
25,597	22,820	33.7	17.21

Owing to the exhaustion of pay ore reserves, stoping operations ceased on the Kimberley Reef series and, following the extraction of all payable ore from the Main Reef Leader at No. 2 Shaft, salvage operations were in progress at the end of the year in preparation for the final closure of this shaft.

DAGGAFONTEIN MINES, LIMITED

CAPITAL: Authorised—£2,000,000. Issued—£1,750,000 in 7,000,000 Shares of 5s. each, fully paid.

Tons milled... 2,660,000. Yield (per ton, 4.63 dwt.)... 615,146 oz

Income and Expenditure Account		Appropriation Account	
	£		£
Revenue (per ton milled 57/8.3)	7,672,954	Taxation:	
Working Costs (per ton milled 29/3.7)	3,898,491	Union Government Income Tax	1,774,297
		Provincial Tax	2,589
Working Profit (per ton milled 28/4.6)	3,774,463		1,778,886
Uranium and Sulphuric Acid Profit—subject to adjustment	1,377,769	Add—	
Total Working Profit	5,152,232	Adjustments in respect of previous years	1,361
Sundry Revenue, less Expenditure	80,304		1,778,247
	5,232,536	Government share of Profits under Mining Lease	790,959
Less: Interest on Uranium Loans	162,247	Dividend No. 43 of 3/- per share	1,050,000
	5,070,289	Dividend No. 44 of 3/- per share	1,050,000
Add—		Directors' Special Remuneration	7,500
Unappropriated Profits at December 31, 1953	455,711	Appropriations for Capital Expenditure:	
		Expenditure on Fixed Assets	48,481
		Redemption of Uranium Loans	350,555
		Balance unappropriated at December 31, 1954	450,258
	£5,526,000		£5,526,000

ORE RESERVE (based on pay limit of 2.9 dwt.) (1953—2.8 dwt.):

Tons	Stope Width (inches)	Stope Value (dwt.)	Inch-dwt.
1953	13,776,600	43.83	240
1954	13,468,600	43.95	241

Included in the Reserve at the end of 1954 were 5,307,600 tons, averaging 6.45 dwt. over a width of 48.37 inches, equivalent to 312 in.-dwt. on the Kimberley Reef Series.

The value of the ore mined from the Reserve in 1954 was 5.57 dwt

DEVELOPMENT:—			
Advanced	Sampled	Percentage payable	Avg. reef width (inches)
Main Reef Leader	17,108	15,345	46.0
Kimberley Reef	35,654	28,540	29.8

OPERATIONS.—During the year the Company agreed to undertake the development of two haulages on the Kimberley Reef horizon into the property of the Grootvlei Proprietary Mines Limited, all costs incurred in this development being for the account of that Company. The Company is entitled to mill and treat any ore recovered in the development of the two haulages and to retain for its own benefit the proceeds of any gold or precious metals won from such treatment.

SHAREHOLDING.—The Company's shareholding in East Daggafontein Mines Limited remains unchanged at 449,892 shares.

URANIUM.—For the purposes of the sale and loan arrangements made through the Atomic Energy Board, the uranium plant was regarded as being in full production from January 1, 1954, and the sales contract operates for a period of ten years from that date. The loans advanced to the Company in terms of these arrangements, up to and including December 31, 1953, are repayable, with interest, in equal quarterly instalments over the same period.

Additional uranium loans totalling £390,901, including interest accrued to December 31, 1954, were obtained during the year. These additional loans are to be repaid, with interest, in equal quarterly instalments over a period of nine years from January 1, 1955.

Total expenditure on the uranium and acid plants amounted to £4,615,552 by the end of the year.

EAST DAGGAFONTEIN MINES, LIMITED

CAPITAL: Authorised—£2,000,000. Issued—£1,865,000 in 3,730,000 Shares of 10s. each fully paid.

Tons milled... 1,121,000. Yield (per ton, 3.38 dwt.)... 189,707 oz.

Income and Expenditure Account		Appropriation Account	
	£		£
Revenue (per ton milled 42/2.9)	2,367,594	Taxation:	
Working Costs (per ton milled 32/4.6)	1,814,984	Union Government Income Tax	252,610
		Provincial Tax	430
			253,040
Working Profit (per ton milled 9/10.3)	552,610	Add—	
Sundry Revenue, less Expenditure	6,947	Adjustments in respect of previous years	240
Total Profit	559,557		253,280
Add—		Directors' Special Remuneration	8,000
Balance to credit of Appropriation Account at December 31, 1953	270,739	Appropriation for Capital Expenditure	1,803
		Dividends:	
		No. 29 of 9d. per share	139,875
		No. 30 of 9d. per share	139,875
		Unappropriated Profit December 31, 1954	287,463
	£830,296		£830,296

ORE RESERVE (based on pay limit of 3.3 dwt.) (1953—3.3 dwt.):

Tons	Stope Width (inches)	Stope Value (dwt.)	Inch-dwt.
1953	4,332,400	36.89	160
1954	4,091,700	36.77	156

The Reserve, at the end of 1954, included ore developed on the Kimberley Reef which totalled 1,181,900 tons averaging 5.18 dwt. over a stoping width of 36.99 inches equivalent to 192 inch-dwt.

During the year under review the ore mined from the reserve was 4.39 dwt., which is 0.04 dwt. higher than the value of the Reserve at the end of 1953.

DEVELOPMENT:—

	Footage Advanced Sampled	Percentage payable	Avg. reef width (inches)	Avg. assay value (dwt.)	Inch-dwt.
Main Reef Leader	20,829	12.780	25.0	9.09	226
Kimberley Reef	22,473	17.985	17.2	4.87	256

THE SOUTH AFRICAN LAND AND EXPLORATION COMPANY, LIMITED

CAPITAL: Authorised—£500,000. Issued—£433,125 in 2,475,000 Shares of 3s. 6d. each, fully paid.

Tons milled... 1,213,000. Yield (per ton—3.69 dwt.)... 223,592 oz.

Income and Expenditure Account		Appropriation Account	
	£		£
Revenue (per ton milled 45/11.3)	2,786,729	Taxation:—	
Working Costs (per ton milled 34/11.3)	2,119,521	Union Government Tax	287,131
		Provincial Tax	230
			287,361
Working Profit (per ton milled 11/-)	667,208	Less: Adjustment in respect of previous years	658
Sundry Revenue, less Expenditure	13,502		286,703
Total Profit	680,710		
Add—		Government's Share of Profits under Mining Lease	6
Balance to credit of Appropriation Account December 31, 1953	259,008	Dividend No. 32 of 1s. 3d. per share	154,687
		Dividend No. 33 of 1s. 6d. per share	185,625
		Directors' Special Remuneration	7,500
		Appropriation for Capital Expenditure	27,800
		Balance unappropriated at December 31, 1954	277,397
	£939,718		£939,718

ORE RESERVE (based on pay limit of 3.3 dwt.) (1953—3.4 dwt.):

Tons	Stope Width (inches)	Stope Value (dwt.)	Inch-dwt.
1953	3,198,200	41.60	217
1954	3,328,100	42.01	220

DEVELOPMENT:—

	Footage Advanced Sampled	Percentage Payable	Average reef width (inches)	Average assay value (dwt.)	Inch-dwt.
	58,187	41,270	39.1	22.58	553

CAPITAL EXPENDITURE.—During 1954 expenditure under this heading on shaft sinking, development and equipment amounted to £25,379. Expenditure for the current year is estimated at £17,000.

WESTERN REEFS EXPLORATION AND DEVELOPMENT COMPANY, LIMITED

CAPITAL: Authorised—£2,000,000. Issued—£1,750,000 in 7,000,000 Shares of 5s. each, fully paid.

Tons milled... 1,395,000. Yield (per ton, 3.91 dwt.)... 272,452 oz.

Income and Expenditure Account		Appropriation Account	
	£		£
Revenue (per ton milled 48/9)	3,400,229	Taxation:	
Working Costs (per ton milled 37/3.3)	2,599,915	Union Government Income Tax	6,823
		Provincial Tax	1,364
Working Profit (per ton milled 11/5.7)	800,314	Dividend No. 26 of 1s. 3d. per share	437,500
Uranium and Sulphuric Acid Profit—subject to adjustment	1,415,767	Dividend No. 27 of 1s. 3d. per share	437,500
Total Working Profit	2,216,081	Directors' Special Remuneration	8,017
Sundry Revenue, less Expenditure	59,938	Transfer to Uranium Reserve	250,000
	2,276,019	Transfer to Capital Reserve	68,820
Less: Interest on Uranium Loans	192,216	Appropriations for Capital Expenditure:—	
	2,083,803	Expenditure on Fixed Assets	255,551
Add: Unappropriated Profit at December 31, 1953	382,031	Redemption of Uranium Loans	414,640
	£2,465,834	Redemption of Unsecured Redeemable Debentures	200,000
		Unappropriated Profit—December 31, 1954	385,619
			£2,465,834

ORE RESERVE (based on pay limit of 3.3 dwt.) (1953—3.2 dwt.):

Tons	Stope Width (inches)	Stope Value (dwt.)	Inch-dwt.
1953	4,763,000	47.46	232
1954	4,479,000	46.88	219

Included in the current year's reserve is ore on the Vaal Reef horizon totalling 351,500 tons, averaging 10.15 dwt. over 39.10 in. or 397 in.-dwt. The value of the ore mined from the Reserve in 1954 was 5.03 dwt.

DEVELOPMENT:—

	Footage Advanced Sampled	Percentage payable	Avg. reef width (inches)	Avg. assay value (dwt.)	Inch-dwt.
Elsburg Reef Series	55,251	32,990	44.3	31.44	387
Vaal Reef	27,716	9,485	63.9	11.86	65.43

In addition, prospecting development was accomplished on a portion of the farms Goedgenoeg No. 62 and Nootgedacht No. 53, which are outside the Mining Lease Area, but over which your Company holds rights under the Reserved Minerals Development Act. The footage advanced in these areas during 1954 totalled 7,133 ft., of which 4,175 ft. were sampled; the payable footage, equivalent to 61.8 per cent, amounted to 2,580 ft., averaging 14.37 dwt. over 56.16 in. or 520 in.-dwt.

PROPERTY.—The surface rights of the farm Nootgedacht No. 53, have been reduced as a result of the expropriation by the South African Railways of the surface rights over two areas, in extent 3.57 morgen and 167 square rods, respectively, of Portion D of the farm.

The Company has applied for a mining lease over approximately 630 claims on certain portions of the farm Goedgenoeg No. 62, district Klerksdorp to the west of the present mining lease area. It is hoped that this lease will be granted during the current year.

ORKNEY TOWNSHIP.—The Company is the owner of Orkney Township situated on the farm Orkney No. 115, district Klerksdorp. During the year 57 stands were sold for £21,190 and a balance of 1,180 stands are still available for sale. Total collections in respect of sales of stands since the inception of the Township amounted to £101,637 at the end of 1954.

URANIUM.—For the purposes of the sale and loan arrangements made through the Atomic Energy Board, the uranium plant was regarded as being in full production from January 1, 1954, and the sales contract operates for a period of ten years from that date. The loans advanced to the Company up to and including December 31, 1953, are repayable, with interest, in equal quarterly instalments over the same period. Four quarterly instalments totalling £604,770 were accordingly paid during the year under review.

Additional uranium loans were negotiated during the year. These, with interest accrued to December 31, 1954, amounted to £542,986. The additional loans are to be repaid, with interest, in equal quarterly instalments over a period of nine years from January 1, 1955.

Total expenditure on the uranium and acid plants amounted to £5,573,175 by the end of the year under review.

LOANS.—NATIONAL FINANCE CORPORATION OF SOUTH AFRICA.—On December 31, 1954, the Company redeemed £200,000 of the loan of £500,000 advanced to it by the National Finance Corporation of South Africa against the issue of Unsecured Redeemable Debentures.

SHAREHOLDINGS.—During the year the Company exercised a preferent right held by it in terms of the Agreement providing for the formation of Vaal Reefs Exploration and Mining Company Limited to subscribe for 180,000 shares of 5s. each in the capital of that Company at the price of 16s. 8d. per share. The exercising of this right exhausted the preferent rights held by the Company to participate in increases of the capital of the Vaal Reefs Company.

The 180,000 shares in Vaal Reefs Exploration and Mining Company Limited were sold during the year at a profit of £68,820.

VAAL REEFS EXPLORATION AND MINING COMPANY, LIMITED

(Incorporated in the Union of South Africa)

EXTRACT FROM THE STATEMENT BY THE CHAIRMAN, MR. R. B. HAGART, WHICH HAS BEEN CIRCULATED WITH THE ANNUAL REPORT AND ACCOUNTS FOR THE YEAR ENDED DECEMBER 31, 1954.

Considerable progress was made during 1954 in the opening up of your Company's mine. Work on the No. 1 Vaal Reefs Shaft System has proceeded satisfactorily. The 18 ft. sub-vertical ventilation shaft, being sunk from a point on the 4,000 ft. level, was commenced in June, 1954, and by the end of February, 1955, had reached a depth of 2,468 ft. below the collar (6,431 ft. below surface). It is expected to complete this shaft by the end of May, 1955. The 24 ft. sub-vertical main shaft, also being sunk from the 4,000 ft. level, was commenced after the close of the year under review and by the end of February, 1955, had reached a depth of 61 ft. Sinking operations in the 18 ft. vertical ventilation shaft, being sunk from the surface, were commenced in September, 1954, and by the end of February, 1955, the shaft had reached a depth of 1,901 ft. During January of the current year, the shaft was sunk 590 ft.—a world record for a circular shaft sunk under manual cleaning conditions. The 24 ft. vertical shaft, also being sunk from surface, was commenced in February, 1955, and by the end of that month had reached a depth of 91 ft.

The 18 ft. sub-vertical ventilation shaft intersected the Vaal Reef at a depth of 5,486 ft. from surface, giving an average value of 52.88 dwt. over a width of 4.16 in., equivalent to 220 in.dwt.

There was a significant increase in the development footage accomplished during 1954. Although there was a slight decline in the percentage of payability, the values obtained improved and the results, as a whole, continued to be encouraging.

Considerable progress was also made during 1954 in the provision of surface plant and equipment. The permanent shaft offices and four workshops were completed. A total of 54 houses for European employees was

completed on the mine and in the neighbouring township of Orkney, as also a residence for single men. Further houses are under construction. By the end of the year, a limited amount of accommodation had been provided for Native employees. Work on the reduction plant was commenced and a variety of other surface installations completed.

During the year, the Minister of Mines advised the Company that it had been decided to grant the Company a mining lease over the whole of the area held under the prospecting and mining lease, comprising 6,918 claims. The Company was also formally approved as a uranium producer under the Atomic Energy Act, 1948. Information regarding both these matters was published in November, 1954. It is anticipated that the uranium plant will be in production by the end of 1956.

In April, 1954, the Company made a further issue of 4,300,000 shares of 5s. each at a price of 16s. 8d. per share. Of this total, 4,000,000 shares were offered to shareholders for subscription pro rata to their holdings, and 77.56 per cent of this issue was subscribed by shareholders, leaving 22.44 per cent to be taken up by the underwriters. The balance of 300,000 shares was subscribed by Western Reefs Exploration and Development Company, Limited and Anglo American Corporation of South Africa Limited in terms of your Company's Flotation Agreement.

In my last review, I mentioned that the additional capital required to bring the mine to production in 1956 was then estimated at approximately £8,000,000. After taking into account the amount raised by the recent issue, the balance to be found during 1955 and 1956 amounts to approximately £4,400,000. The question of how this sum can best be raised is now under consideration by the Board of your Company and an announcement will be made as soon as circumstances permit.

Expenditure on shaft sinking, development and equipment during 1954 was £2,013,680. The total expenditure to December 31, 1954, on these items together with other expenditure of a capital nature, amounted to £3,787,729, giving, as at that date, an excess of capital funds raised over expenditure on fixed assets of £1,032,385.

NOTES

- (1) With the re-opening of the London bullion market on March 22, 1954, the Union Government withdrew the permission, previously held by producers, to dispose of a portion of their output on the free gold market and all gold produced is now sold to the South African Reserve Bank. The price payable to producers is based on the average price realized by the South African Reserve Bank from sales of gold after deduction of the usual charges.
- (2) The average price of gold sold during the year was 248s. 9d. per ounce fine compared with 247s. 2d. during the previous year.

THE FULL REPORTS AND ACCOUNTS CAN BE OBTAINED FROM THE LONDON SECRETARIES OF THE COMPANIES, ANGLO AMERICAN CORPORATION OF SOUTH AFRICA, LIMITED, 11, OLD JEWRY, LONDON, E.C.2.

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February Mine Returns

OIL OUTPUT

Company	February 1955 (in tons)	Months Since Year End	Cumulative Totals (in tons)	
			This year to date	Last year to date
Anglo Ecuadorian	25,696	10	300,296	286,293
Apex Trinidad	34,887	4	187,494	183,149
Kern Oilfields	23,893	8	234,432	246,186
Lobitos Oil	40,833	2	86,561	78,782
Qatar*	405,447	1	405,447	382,012
Trinidad Central	8,075	2	16,991	16,485
Trinidad Leaseholds	73,509	7	642,721	597,925
Trinidad Petroleum	37,770	6	284,532	274,263
Ultramar†	103,640	2	220,777	212,394

Note—1 ton taken to equal seven barrels

* January figures

† Output figures are for S.A.P. Las Mercedes in which Ultramar holds a 50 per cent interest

COAL OUTPUT

Company	February 1955 (in tons)	Months Since Year End	Cumulative Totals (in tons)	
			This year to date	Last year to date
Amal. Coll. of S.A.	546,540	2	1,089,008	1,112,632
Apex	74,109	2	161,190	146,471
Blesbok	38,356	2	82,424	88,832
Coronation	82,816	2	175,941	180,232
Natal Navigation	95,758	7	805,935	896,840
New Clydesdale	68,963	7	592,651	574,005
New Largo	69,617	2	141,779	129,994
S.A. Coal Estates	117,859	7	1,068,568	1,086,446
Springbok	67,588	2	138,483	130,230
Transvaal & Delagoa Bay	103,470	5	722,691	726,097
Vierfontein	97,485	2	197,073	118,657
Vryheid Cor.	41,117	2	86,649	81,200
Vryheid Cor.*	33,778	2	71,678	66,806
Wankie Colliery	291,860	5	1,691,512	1,217,420
Wankie Colliery*	18,080	5	99,631	67,329

* Coke

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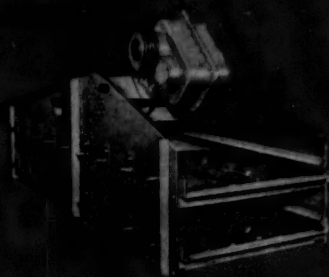
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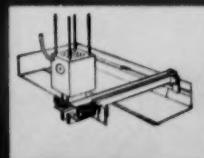
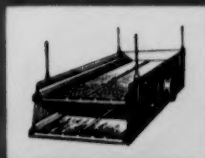
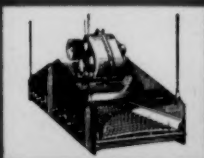
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